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SEPTEMBER, 1900.

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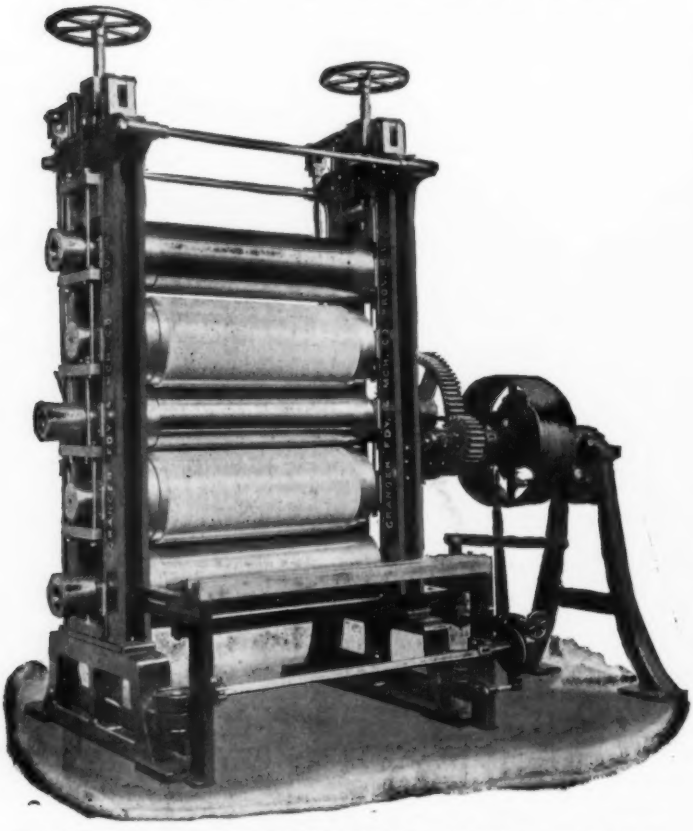

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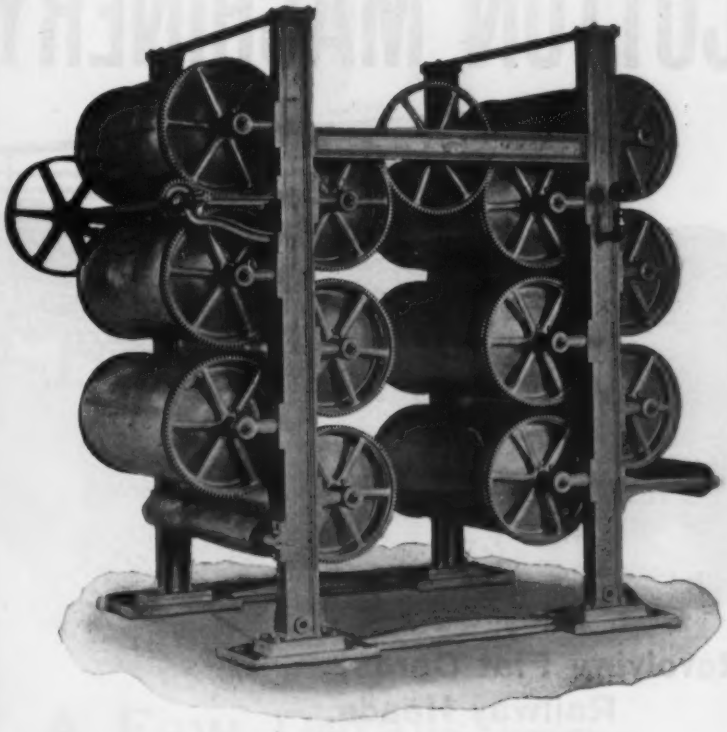

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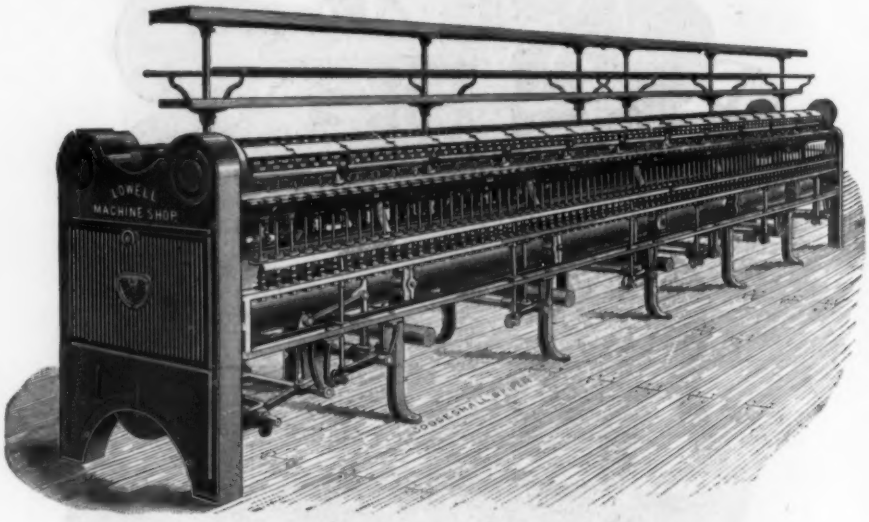

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Drawing Frames,
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Twisters, Spoolers,
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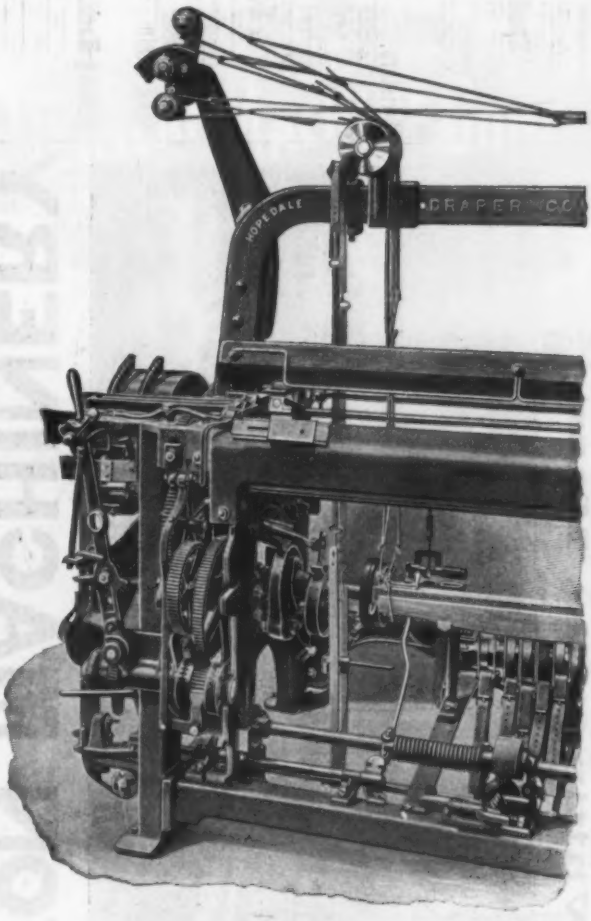

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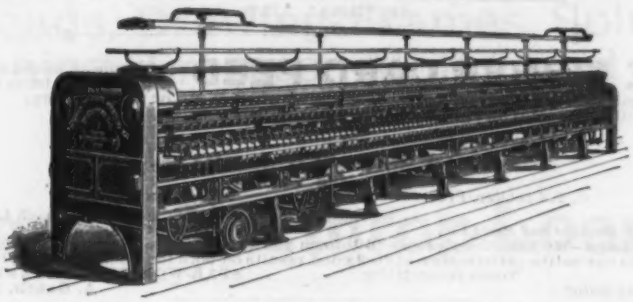

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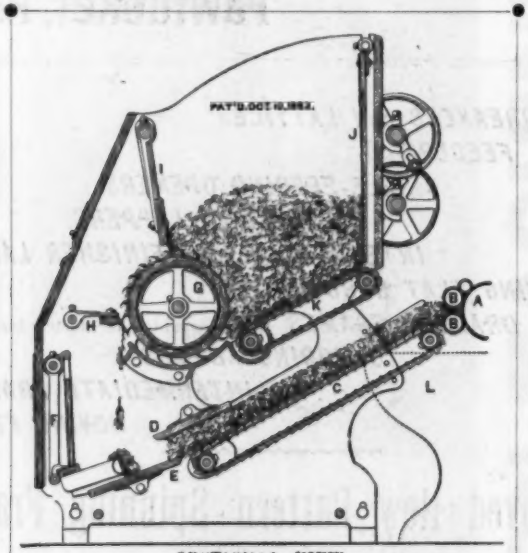
EDWIN FARNELL, Agent.



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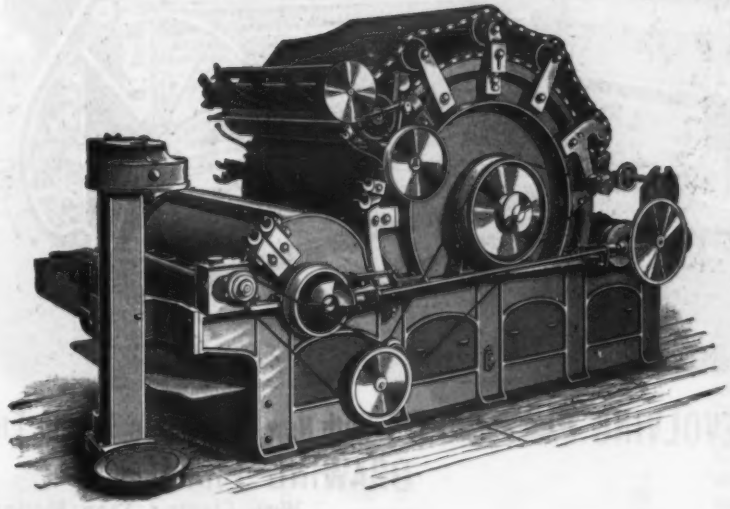

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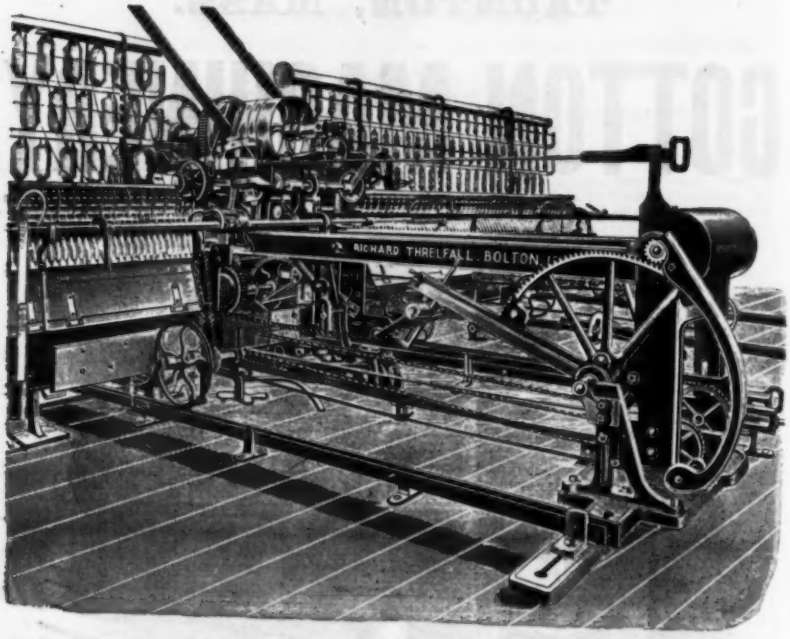

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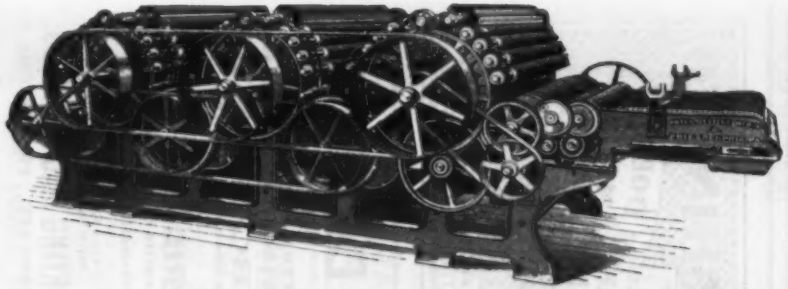

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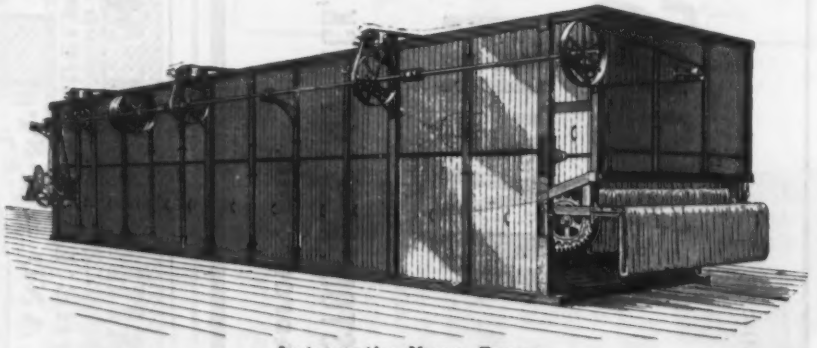

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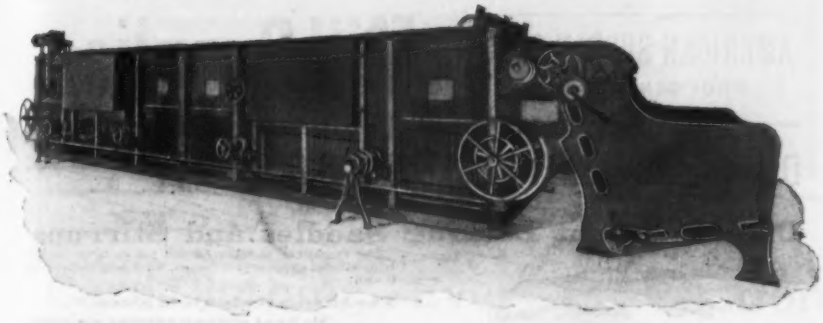

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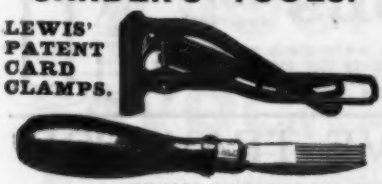

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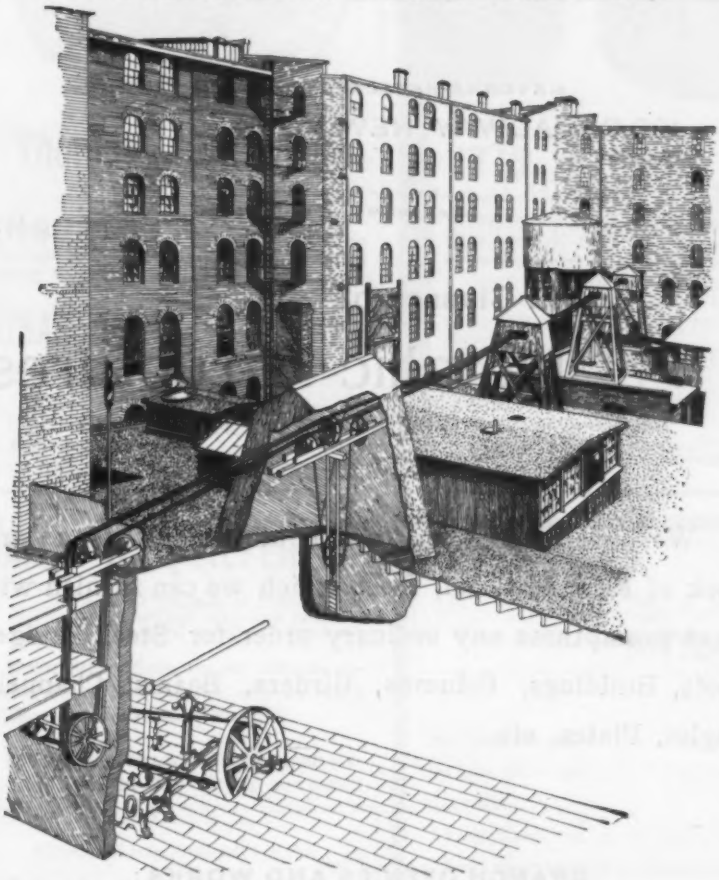

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List of Textile Patents.

Issued July 31, and August 7, 14 and 21, 1900.

Carding Apparatus, Wool. 656,403, 656,402. E. Gessner, Aue, Germany. David Gessner administrator of said E. Gessner, deceased.

Carpet Fabric, Ingrain. 656,113. H. Hardwick, Philadelphia, Pa., assignor to the Ivins, Dietz & Metzger Co., same place.

Cloth Stretching Machine. 654,587. A. Ashworth, Bury, Eng.

Cotton Cleaning Mechanism. Seed. 656,107. H. W. Graber, Dallas, Tex.

Dyeing. 656,015. F. Dommer, Paris, France.

Dyeing Khaki. 655,854. G. Comber, Knutsford, and John C. Chorley, Warrington, Eng.

Hosiery, Obtaining Bicolored. 654,864. W. Wilson, Philadelphia, Pa.

Knitting Machine. 654,695. F. Wilcomb, Pawtucket, R. I., assignor to the Standard Machine Co., of Pennsylvania.

Knitting Machine, Circular. 656,155. A. J. Gulich, Clearfield, Pa., assignor to Perfection Mch. Co., same place.

Knitting Machine. 656,535. M. J. Fisher, Utica, N. Y.

Knitting Machine. 656,538. E. J. Franck, Philadelphia, Penn.

Knitting Machine. 656,216. J. A. Ricard, Manchester, N. H.

Knitting Machine. 656,218. J. E. Rowe and Lawrence A. Bentz, Pawtucket, R. I., assignor to the E. Jenckes Mfg. Co. same place.

Knitting Machine Stop Motion, Circular. 656,493. Wm. F. West and Brigham Payne, Woonsocket, R. I.

Knitting Machine Needle Depressing Mechanism. 654,813. B. F. Steber, Utica, N. Y.

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Knitting Machine, Straight Rib. 654,982. D. Hurley and Wm. T. Barratt, Bennington, Vt., assignors to Chas. Cooper, same place.

Knitting Machine Yarn Holder. 654,812. B. T. Steber, Utica, N. Y.

Knitting Machines, Tread Feeding Mechanism for Straight. 655,046. J. N. Bennor, Macon, Ga., assignor to the Bibb Mfg. Co. same place.

Loom. 656,642, 655,643, 656,645, 655,647, 655,648, 655,649. W. H. Baker, Central Falls, R. I., and F. E. Kip, Montclair, N. J.

Loom. 655,262. A. Morell, Millbury, Mass., assignor of one-half to John B. Brady, same place.

Loom. 654,915. C. F. Perham, Lowell, Mass.

Loom. 656,613. W. H. Baker, Central Falls, R. I. and F. E. Kip, Montclair, N. J.

Loom. 656,592. H. Wyman, Worcester, Mass., assignor to the Crompton & Knowles Loom Wks., same place.

Loom Harness Attachment. 656,169. P. Cassidy, Salem, Mass.

Loom, Lappet. 656,198. J. R. MacColl, Pawtucket, R. I.

Loom Shuttle Check. 656,181. W. F. Draper, Hopedale, Mass.

Loom Shuttle Driving Mechanism. 656,432. E. Suter, Paterson, N. J.

Loom Warp Beam. 656,386. J. Betsch, Woonsocket, R. I.

(Continued on page 479.)

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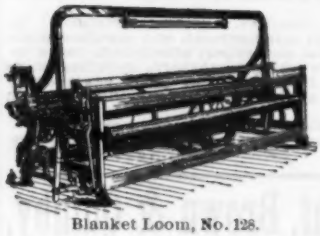

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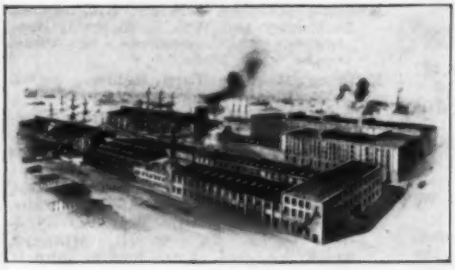

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JOHN CAPSTICK.

TEXTILE WORLD.

Vol. XIX. SEPTEMBER, 1900. No. 3.

JOHN CAPSTICK.

John Capstick was born in Manchester, England, on March 24th, 1825, and at a very early age, having lost both father and mother, was taken into the family of Professor Charles O'Neil and brought up by him in the chemical profession. His successful career as a colorist and chemist, was due, in a great measure, to the careful training he received at the hands of his patron and tutor. This connection gave Mr. Capstick, early in life, an excellent opportunity to become thoroughly acquainted with all the many details of chemistry so essential to a practical knowledge of the business he finally adopted, and for which his natural aptitude fitted him.

The inclination of his mind toward chemical pursuits, led Mr. Capstick, when quite a young man, to accept a position in the coloring department of the well known print works of Thomas Hoyle & Sons, of Manchester, England. During his engagement with this firm, he diligently devoted himself to his duties, and still further advanced his chemical knowledge, laying the foundation of his future career.

Eventually, seeing that America offered greater inducements for advancement, he decided to make the States his future home. With this idea in view, Mr. Capstick came to this country, and procured employment in the coloring department of the Pacific Mills, Lawrence, Mass., where for many years he faithfully discharged the many duties which were intrusted to him.

About the year 1867 Mr. Capstick accepted the position of manager of the delaine department, at the works of A. & W. Sprague Mfg. Co., Cranston, Rhode Island, which position he filled with great credit for several years.

Mr. Capstick eventually embarked in business for himself, and for the past eighteen years has been identified in the printing, dyeing, bleaching and finishing business with his two sons, John H. and Thomas, known as the Columbia Print Works. These works are situated at Montville, New Jersey, and the business under the able management of Mr. Capstick and his two sons has grown to very large proportions, giving employment to some hundreds of operatives. Mr. Capstick died on March 8th, 1900.

For a number of years he held the office of Justice of Peace in his district. A man of quaint humor, some of his unique and just decisions in the many law cases brought before him, will be remembered for many years in Morris County. Of kindly disposition, and many excellent qualities, he endeared himself to his workpeople and fellow townsmen.

A broad gauged business man, who had ever the interests of his employees at heart, a liberal giver to all charitable work, Mr. Capstick will be mourned by the community at large. For the ast two or three years Mr. Capstick had given less attention to business than formerly, owing to the infirmities of age, but his two sons who survive him practically managed, and are still carrying on the large business which he founded.

THE ELECTION AND THE TEXTILE INDUSTRY.

In this, as in every Presidential campaign, the business interests of the country in general, and the textile manufacturing interests in particular, have a deep interest. Undoubtedly, the present depression of the textile industry is due in large measure to the uncertainty as to the result of the November election.

Nothing is so ruinous to business as uncertainty. Known conditions, no matter how bad, can be reckoned with; but, when the business man is groping in the dark, knowing that a change may be impending whose influence for good or ill he cannot estimate, the natural impulse is to restrict purchases to immediate wants.

This results in what we see today; cessation of demand for goods, and mills shutting down. These are the results of fear, and are the natural and necessary precautions of men who have their savings invested in business and see the possibility of their being destroyed by a change in the policy of the government.

It is not usually the province of a trade publication to discuss politics, but the textile industry is so vitally affected by party policies that any consideration of the prosperity of the former involves the latter.

The textile industry has much at stake. The industry is of large proportions, and it has ever been the object of political attacks.

Just eight years ago our mills were enjoying a period of great prosperity, and the election of that year placed in power a party distinctly pledged to experiment with the textile industry. The effect of those experiments are known to all. Values were cut in two, panic seized upon everyone, mills were closed, and a period of great disaster followed the prosperity of 1892.

Occupied with their personal affairs, the friends of the textile industries showed the utmost confidence in the result of the election of that year, and felt no alarm until the election returns brought them face to face with a revolution in their business.

Is that experience to be repeated this year? Are the American people again to vote a change, and consider afterwards whether it was advisable or not?

The extent of the interests involved, and the frightful consequences which may follow a mistake, should bring home to every voter the responsibility which rests upon him, and cause him now to calmly consider what is best for him to do.

Basing our estimate upon the 1890 census and allowing for the growth of the last ten years, we find there are over one thousand millions of dollars invested today in the textile manufacturing industries of the United States, woolen, cotton and silk; that these mills are producing annually goods valued at nearly nine hundred millions of dollars, and that there are 686,000 people employed in the mills, who receive $233,957,463 annually in wages.

Industries which directly support 686,000 people, and indirectly many hundreds of thousands more, are worth saving. The people interested can well afford to devote the necessary time to the consideration of what threatens them in this year's campaign.

Of all the persons engaged in textile manufacturing, the employees, who have no investment in the business, are the ones who will be affected most by a change. A large part of the thousand millions of dollars invested in the business is in the form of material and goods in process. This can in times of threatened danger be converted into cash, and put in a safe place, while the investment in the form of buildings and machinery stand idle awaiting profitable employment. We see this process going on even now, and while it often involves heavy loss, it is the refuge of capital.

The employees, on the other hand, have no such refuge. Their interests are bound up with capital, and if capital is unemployed the wages of labor

disappear, and idleness, want and suffering, such as we saw in the dark period following the free wool experiment of 1892, are the inevitable results.

But a short time remains before the voters will make the decision at the polls. We ask every friend of American industry to see that they do not contribute by carelessness and indifference, to a result which would by comparison make the dark years following 1892 seem prosperity itself.

An attack upon labor and industry is now in progress, which is far more dangerous because it is masked behind a noisy pretense.

In 1892 the attack was made in the open; this year it is made under the pretense that the liberties of the Philippinos are in danger. Behind this thin mask, we find free trade still a part of the creed; to this is added free silver, whose immediate effect would be to reduce wages one-half.

Let the textile manufacturers and employees consider this subject calmly in the few weeks remaining before election day. Let each one ask himself: What is best for the interests of myself and my family? What will be the effect on my income of a free trade experiment like the one tried in 1892? How will my income be affected, if the dollar received for my labor is worth but fifty cents?

THE SITUATION IN THE TEXTILE TRADES.

Seldom have conditions in all branches of textiles shown so clearly the speculative character of these trades as at present, and this is true not of our country alone, but of the whole world.

In the cotton industry, the unusual demand for the staple, which accompanied the business revival of 1899 throughout the world, has brought the visible supply of cotton down to the extremely low mark of 744,959 bales on Sept. 1st. This quantity of cotton would supply the cotton mills of the world barely three weeks. The invisible supply stored at the mills alone prevents a cotton famine.

In the cotton goods market, we find the reverse condition of affairs. In place of scarcity, we find a surplus, a temporary over-production of manufactured goods which has depressed prices. With increased cost of raw material and decreased prices for goods, the manufacturers throughout the world have confined their operations to filling old contracts and then curtailed production. The Chinese troubles contributed largely to the depression in the goods market by closing off an outlet which was taking cotton goods at the rate of $100,000,000 annually.

But mankind will continue to wear cotton goods in spite of wars abroad or political disturbance at home. This constitutes the solid foundation of our hopes for the future. The increase of the price for raw cotton which it now seems likely will be maintained for some time, will place $120,000,000 in the pockets of the Southern planter. He can use it in his business, and this vast sum will stimulate trade and industry throughout the whole country.

High priced cotton, if maintained, will be a great boon to the United States, North and South. We can bid good-bye with a light heart to the five cent cotton of two years ago. It meant poverty and bankruptcy for the Southern farmer, and benefited no one.

There is no occasion for discouragement. The temporary disturbances of today will disappear very soon, if not prolonged by a change in political administration.

In woolens, the case is different. The stock of raw material on hand is ample for all requirements. The inflation of wool prices in 1899 was not accompanied, as in the case of cotton, by an exhaustion of the stock on hand. On the contrary, many causes have contributed to increase the stock of wool.

In the first place, wool is not used so generally for wearing apparel, and no new countries have been opened

up to trade which called for woolen goods. Cotton has largely supplanted wool in hosiery and knit goods. In ladies' dress goods and men's wear woolens, a like substitution has taken place.

The high prices for wool forced the manufacturer to use shoddy and waste, and the result is that wool values have been on the decline since the beginning of the new year.

In woolen goods, we see the same depression. The consumer failed to materialize when prices of goods reached high-water mark. The price of 16-oz. Clay worsted, which stood at $1.10 per yard in January, 1899, was carried by the boom to $1.57 in January, 1900, an increase of over 40 per cent. This fabric has dropped to $1.37 in September, 1900. This is a fair representation of the course of prices for woolen and worsted goods.

The woolen trade has too vivid a recollection of the kicks and cuffs given to this business by political agitators, to be unmindful of the Presidential campaign. Orders in light weights have been small, and mills are running slack or are shut down.

One of the most hopeful signs in this as well as in other textile lines, is the promptness with which a reduced demand for goods is met by a reduced supply. The inflation of credits and demoralization of the market, which always accompany the manufacture of stock goods, is avoided, and the industry is better able to meet adversity, and will the quicker feel the effects of returning prosperity.

Nothing is found in the silk industry today to relieve the dreary monotony of depression and curtailment. In fact the silk industry has somewhat the worst of it. Trade has fallen off at a time when manufacturers were carrying large stocks of high priced raw material. The shrinkage in values of both raw stock and manufactured goods has proved a heavy load, and a few failures have already occurred.

Not only has the market for raw material been unfavorable to the manufacturer, but in addition to this the greatly increased capacity of our silk mills has resulted in piling up a large stock of goods. In the last ten years the number of spindles has been nearly doubled, while the number of silk looms has increased over 131 per cent. This enormous increase has been accompanied by no increased demand for goods at home, and there has been no market for American silks abroad.

Under such conditions, nothing but low prices and over production could be expected. Demand must catch up with supply before a healthy condition is restored.

Taking a general view of the textile industry, the prospect is by no means discouraging. There is, to be sure the present reaction from a boom, and the adverse influence of a Presidential election to contend with; but, both of these influences will pass away and with the order system of making goods now so generally practiced, the inevitable resumption of demand will again bring prosperity to both employer and employed.

We shipped to China nearly as much cotton cloth in July, 1900, as in July, 1899, the figures being for 1900, 15,519,945 yards, and for July, 1899, $16,245,874. A comparison of the exports for the seven months ending July of these two years, tell a different story. In that period of 1899, we shipped to China 145,448,713 yards, and for same period of 1900, 98,878,269 yds., showing a decrease of over one-third.

The imports of raw cotton into the United States during July amounted to 1,880,537 lbs., and for same month of 1899, to 2,577,105 lbs.; for the seven months ending July, 1900, the imports of raw cotton were 41,549,089 lbs., against 36,363,750 lbs. for same period of last year.

Our exports of cotton during July were 156,008 bales, and for same period last year, 181,183 bales. For seven months ending July, 1900, the exports were 3,238,697 bales, as compared with 2,961,581 for same period of last year.

WOOL MARKET.

Graphic Chart of Fluctuations in Wool Values brought up to date.

Conditions in the wool markets, both here and abroad, have not changed materially during August. The wool trade had for a long time based their hopes for better things upon the light weight season, and the long delayed opening which took place in the early part of the month, was followed by a feeble rally in the wool market.

The orders for light weights taken by manufacturers, necessitated in some cases the purchase of raw material from which to make the goods, and this business gave a slight momentary activity to the market. But as the days passed, it became known that trade on light weights was of small proportions.

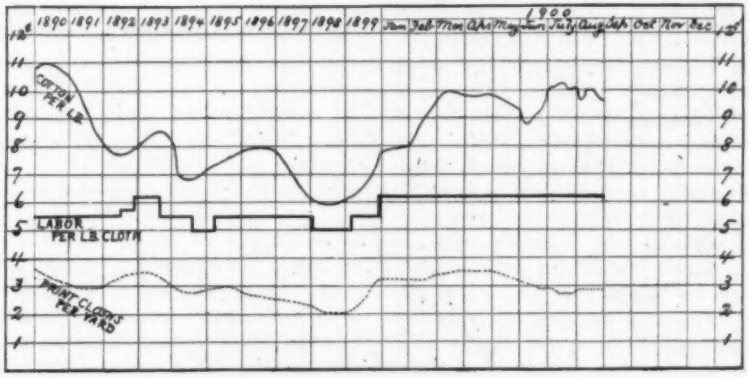
During late years, the wool market has gradually become more in sympathy or harmony with the goods market. This is due in a great measure to the order system in making goods. The manufacturers have bought wool for their actual needs only, and the slowness of light weight business was immediately reflected in the market for raw material. Since that event the market has continued in a dull, listless condition.

Large stocks of wool are reported as held in the West, and the bulk of the shipments to the East are said to be consigned. The manufacturer cannot afford to pay today's prices for wool, and sell his goods at ruling rates. On some grades of wool goods an advance of from 5 to 7½ per cent. has been reported; on others, last year's prices are quoted. Serges have been particularly depressed, owing doubtless to the extensive use of the fancy flannel suiting for summer wear. Sales of light weights are reported as not over 50 per cent. of last year's business for same period.

This explains the attitude of the woolen manufacturer towards the wool market. Last year with large stocks of low priced wool in his possession, he could get about the same price for his goods as he can this year when wool is much higher.

The August line on our wool chart has not taken a pronounced downward course, solely because there has been no pressure to sell. The market is still in a waiting condition. The dealer in wool is waiting for the presidential campaign to end, when he thinks the boom of 1899 will resume business. The manufacturer is waiting for the prices of wool and goods to get into line, so that he can make a living in his mill. While he would doubtless prefer a rise in price of goods, he is perfectly resigned to the equalization being effected by a break in wool prices. Everyone seems to be willing that the present owners of wool should continue in possession, and the result is a dulness which has not been equaled in years. The sales in the three principal American markets for the month are reported 21,839,854 pounds.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900
Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec
COTTON PER LB.
LABOR PER LB. CLOTH
PRINT CLOTHS PER YARD

Graphic Chart of Fluctuations in prices of Cotton, Labor and Print Cloths.

The cotton market during August has experienced only the usual hourly fluctuation due to speculative influences. The showers or lack of showers reported in Texas, or on the Atlantic coast, have kept a feverish and nervous market in constant agitation.

The prospect of a cotton famine which a failure of the new crop would make inevitable, has confronted the world for many months. This has given the daily reports of weather conditions an exaggerated influence. The weather has been on the whole favorable. It never has been, and probably never will be, perfect.

The old crop is about played out. It has become nearly impossible to secure good cotton. The spot market has been extremely quiet, as manufacturers throughout the world have steadily refrained from attempting to purchase what does not exist. The total visible supply, as reported by the Chronicle on August 25th, was 813,367 bales as compared with 2,201,836 bales last year, and 1,673,782 bales in 1898. With such a small stock on hand, and the size of the new crop still uncertain, prices have naturally been maintained.

The goods market has been flat. The Chinese trouble has done much to cause this, but there are more widespread causes. Reaction from the boom of 1899 is still with us, and is accompanied by a worldwide political unrest which is still further aggravated in this country by the presidential campaign in which one great party is advocating nearly every policy that would disturb business and impair the value of industrial property.

Under such conditions we find mills either shutting down or completing orders already taken and drawing upon the stock of cotton at the mill. This state of affairs is reflected in the extremely small quantity of cotton which Lancashire has for a long time been taking from the market, barely 20,000 bales per week.

But no matter what happens in local or international politics people will require cotton cloth, and the new crop will find the world waiting for it. This makes the prospect of low priced cotton extremely doubtful. It is probable that even the new crop of 1900 may be unable to neutralize the effect of the present small stock on hand, and in that case low priced cotton will have to await the development of the 1901 crop.

The curtailment of production has proved insufficient to rally prices, and the decreased consumption of cotton is likely to continue.

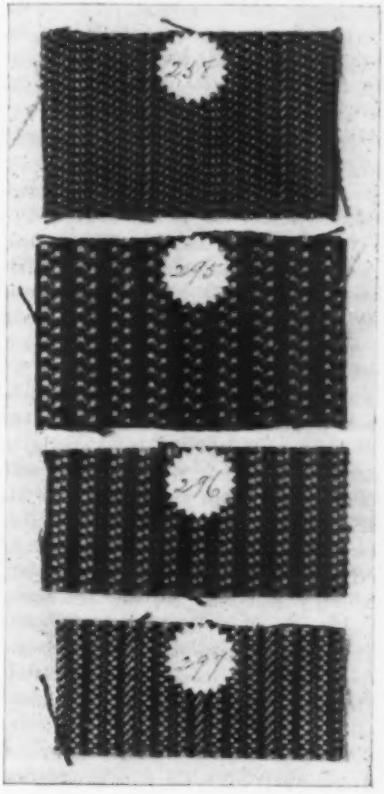
Cotton Worsteds.

The high price of wool has increased the cost of all woolen and worsted goods to such an extent as to greatly stimulate the use of wool substitutes, and it is fortunate for the consumer that so excellent a substitute for worsted has been found in the so-called cotton worsted fabric.

There exists probably in no other trade as cheap a substitute for high priced goods, that comes so near being the equal of the expensive goods, as does the cotton worsted.

To be sure, this fabric lacks the peculiar property, which all wool or worsted cloths possess, of absorbing moisture and affording that protection against the extremes of cold and moisture. The cold, clammy handle of all cotton goods is found in this cotton worsted fabric in proportion to the percentage of cotton in the goods. Wool still remains the best material for clothing where extremes of heat and cold exist, but the mixture of cotton and worsted yarn provides a substitute which comes nearer to the worsted fabric because of the fact that the protection from cold, and the power to absorb moisture, which wool possesses, is partially lost when wool is spun into a worsted thread. The parallel position of the fibres, and the two-ply construction of the worsted thread, destroy in a measure these natural qualities of wool which are shown best when the wool is kept in a more fluffy state, as in the yarn carded and spun by the regular woolen system.

In durability it is the superior of the all-worsted cloth; the patterns and colors can be made as attractive; very little difference exists in the handle or feel of the goods, especially when the cheaper fabric is made half and half cotton and worsted. It is said that the colors are not fast. If the cotton, which is usually black on these goods, is colored with the best grade of aniline black, there will be very little difference between the fastness of the color on the wool, and that on the cotton. Cheap, inferior dyes are fugitive on worsted as well as on cotton. The fancy colors in cotton worsteds are usually on the worsted portion of the goods, making them in this respect the equal of the worsted fabric. The colors of a well-made cotton worsted are superior to the color in many of the all worsted fabrics, and but little inferior to the colors in the better grade of all worsted cloths.



FOUR OF THE LEADING MAKES OF HALF AND HALF COTTON WORSTEDS.

The use of cotton (as well as shoddy) as a substitute for wool, has been of vast benefit to the consumer in keeping down the price of wool.

While no statistics as to the use of these substitutes exists, it is evident to all familiar with the textile industries that large quantities of wool have been displaced by cotton in the

manufacture of cotton worsted. Without this substitute the price of wool would have mounted much higher than it did, and the consumer would have been forced to pay the price or wear rags.

There are many grades of cotton worsteds, varying in texture, quality of cotton and worsted, proportion of cotton used, and weight. Some of the so-called cotton worsteds are made entirely of cotton, but we will not consider that fabric in this article.

Others are made of cotton with a fancy colored worsted thread introduced at intervals to form the checks or stripes of the pattern.

Then there are the fabrics containing from 50 per cent to 60 per cent. of worsted, and which are such sharp competitors of the all worsted goods.

We illustrate four samples of the leading makes of this cloth and have estimated the cost of each one. These figures are not presented as the actual cost in the mill where they were made, but the actual cost cannot be much less than our estimate, which is based upon a modern, well arranged, well equipped mill, making a specialty of cotton worsteds, well managed, and turning out a full production. No allowance has been made for the interest charge which varies so widely in different mills, and the selling expenses, including regular discounts and time, are estimated at 20 per cent. This may be high for some few concerns, but is the usual amount allowed. The prices quoted are those of last season.

No. 258 illustrates a cloth sold by the American Woolen Co. as a product of the National and Providence mills, at $1.30, which, less 20 per cent., nets $1.04 per yard. It weighs 13½ ounces per 6/4 yard; 43 per cent. of this weight is cotton yarn. It is woven with a broken four-leaf twill. There are 64 threads of 2/36s fine worsted warp per finished inch, and 62 threads of 2/20s cotton per inch in the filling. The cost per yard is estimated as follows: Worsted, .56; cotton, .129; labor, .184; expense, .051; total, .924. This leaves 11¾ cents per yard, out of which must come the interest account and the loss on goods sold for less than quoted price.

No. 295 illustrates a fabric sold by J. B. Lorge at $1.25, which, less 20 per cent., leaves $1 per 6/4 yard for the mill. It weighs 12¾ ounces per yard, contains about 40 per cent. of cotton, and is woven with a six-leaf twill. This loose weave and the wide difference between the number of threads per inch in warp and filling makes the fabric somewhat sleazy. There are in the finished cloth 86 threads of 2/36s fine worsted in the warp, and 46 threads of 2/20s cotton in the filling. We estimate the cost as follows: Worsted, .581; cotton, .112; labor, .155; expense, .044; total, .892, or a margin of .108 per yard.

No. 296 illustrates a fabric sold by the Lippitt Woolen Co. for $1.20 or $.96 after the 20 per cent. has been deducted. This cloth weighs 11¾ ounces per yard, contains 42 per cent. of cotton, and is woven with a broken four-leaf twill. The finished fabric has 60 threads of 2/30s fine worsted in the warp, and 50 threads of 2/20s cotton in the filling. The cost estimate per yard is for worsted, .506; cotton, .112; labor, .157; expense, .045; total, .82, or 14 cents less than the quoted price nets the mill.

No. 297 is a fabric sold at $1.20, which, less 20 per cent., leaves the mill $.96 per yard. It weighs 13½ ounces per yard, contains over 46 per cent. of cotton, and the worsted is about a ⅜ blood. There are 64 threads of 2/30s worsted warp, and 59 threads 2/20s cotton filling per inch of finished cloth, which is woven with a broken four-leaf twill. The estimated cost is as follows: Worsted, .494; cotton, .137; labor, .18; expense, .05; total, .861, leaving a margin of .094 per yard.

These estimates are based upon a cost of $1 per pound for the colored fine worsted yarn, $.92 per pound for the ⅜ blood dyed yarn, and $.30 per pound for the colored cotton yarn. The popularity of these goods has led many owners of woolen mills to put

their looms on cotton worsteds. Such mills equipped for the manufacture of woolen goods from the raw stock have found themselves seriously handicapped by their heavy fixed charges, and the results have been in many cases unsatisfactory and discouraging.

These goods can be successfully made, only when a supply of perfect yarn is at hand, and the warping, weaving and finishing departments are adapted for the work of converting this yarn into perfect cloth. These estimates of mill cost and selling expenses are, as we have already said, based upon a modern mill, equipped with the best appliances known, and economically operated to its fullest capacity. The figures cannot be taken as the cost of the goods in the mills which made them. This actual cost may be more than our estimate. The fluctuations of wool prices, and the varying conditions under which each mill manufactures goods, are such that the cost of manufacturing is the same in no two mills. The cost of goods made in the same mill is seldom twice alike.

These figures which we have given are simply estimates based on a careful analysis of small samples of the goods found in the market.

Arbitration in France.

—The suffering among the working classes in France and Belgium, caused by the recent strikes in the textile mills, which lasted for weeks, and resulted in no advantage to the workpeople, has created a sentiment against strikes, which has recently found expression among the Belgian labor organizations in resolutions declaring it to be their intention in the future to avoid strikes as a means of redress and they have appointed a committee to confer with the manufacturers, with the view of investigating the grievances of the workers, and finding a remedy for the hard conditions, under which they are now living.

Print Cloths.

Any general disturbance in the market for cotton goods usually manifests itself most strongly in the print cloth market. This is due, doubtless, to the staple character of the product which serves to keep such lines of goods in close sympathy with consumption and general trade conditions.

The present depression in print cloths, resulting in a shrinkage of over 20 per cent. in values since April, and in the general curtailment of production, demonstrates that for the immediate present, at least, the supply of print cloths is largely in excess of the demand. It would be unsafe to infer from this that the productive capacity of our print cloth mills had been increased until the surplus had become a menace to the market on this line of goods. Allowance must be made for the general reaction from the 1899 boom which has for the present made purchasers of goods very conservative, and it may prove that this reaction has reduced purchases below the actual consumption.

Print cloths do not constitute a finished product ready for the market, but can from one point of view be considered the raw material for the print works. A depression in business results in printers suspending operations, leaving consumption to be supplied from the stock of prints. Meanwhile the print cloths accumulate rapidly. In this way a large stock of print cloths may be offset by a corresponding reduction in prints.

This peculiarity of the print cloth market makes the conditions in the Fall River mills an unsafe guide to judge either of the general market on cottons, or even of the actual market conditions of print cloths themselves.

There are, according to the Textile World's Directory, 115,000 print cloth looms and 363 printing machines in the United States. On 64 by 64 prints the capacity of these looms is about 40 to 50 yards of 28-inch goods in 10 hours. If we call it 40 yards this gives a daily production of 4,600,000 yards.

or 12,672 yards for each printing machine. A printing machine running steadily on ordinary 64 square prints, 28 inches wide, could produce in white ground dress patterns about 25,000 yards in 10 hours. This amount would be increased somewhat, if running on single color work.

The actual average product of a printing machine is much less than these figures, owing to the time consumed in changing from one style to another. This diversified production has become more marked during recent years, and it is doubtful if the 363 printing machines in the United States average over 20,000 yards per machine per 10 hours. On that basis the print cloth product would provide for over 63 per cent. of the capacity of the printing machines, leaving the other 37 per cent. for other goods (of which there is a wide variety), and also for a surplus capacity which all machinery must have in order to meet unusual demands resulting from the ups and downs of demand for goods.

Ten years ago the print cloth looms were all in Northern states, but, owing to the rapid development of cotton manufacturing in the South, we find today over one-eighth of the print cloth looms in Southern states. This development will probably continue with the growth of the industry in that section. The looms which have been started on print cloths in the South are of the latest design, the most of them being the automatic Northrup loom.

It has been the custom for northern manufacturers to decry the Southern goods, and hold them up to the trade as inferior to the genuine article. But doubtless much of this depreciation of Southern print cloths has been due to trade rivalry. Recently we have learned that Southern print cloths have been sold to Massachusetts print works for less than the Fall River prices, and it is stated that the quality of the goods was in every respect equal to the Northern product.

Such transactions are far more convincing than are the statements of competitors, and the product of Southern mills is likely to be of constantly increasing importance in the print cloth market.

The New Arsenic Law.

A bill in regard to the use of arsenic in paper and textiles was passed and became a law at the recent session of the Massachusetts legislature.

This is now the law:

Chap. 325.

An Act relative to the Manufacture and Sale of Textile Fabrics and Papers containing Arsenic.

Be it enacted, etc., as follows:

Section 1. Any corporation, person, firm or agent who directly or by an agent manufactures, sells, exchanges, or has in his custody or possession with intent to sell or exchange, any woven fabric or paper containing arsenic in any form, or any article of dress or of household use composed wholly or in part of such woven fabric or paper, shall on conviction thereof be punished by fine of not less than $50 nor more than $200; provided, however, that this section shall not apply to dress goods or articles of dress containing not more than 1-100 grain, or to other materials or articles containing not more than 1-10 grain of arsenic per square yard of the material.

Section 2. The state board of health shall make all necessary investigations as to the existence of arsenic in the materials and articles mentioned in section one of this act, may employ inspectors and chemists for that purpose, and shall adopt such measures as it may deem necessary to carry out the provisions and to facilitate the enforcement of this act.

Section 3. This act shall take effect Jan. 1, 1901.

Approved May 18, 1900.

The bill went through the legislature without attracting attention, and most of those affected by its provisions knew nothing of its existence.

Outside of a few bright colors used principally on cotton, practically no arsenic is used in the manufacture of textiles. Some years ago when the question of arsenic in textiles and other goods attracted a great deal of attention, the passage of such a law as this one would have been a serious matter to the trade, as at that time, arsenic entered into the composition of many of the dyes, but since then its use has gradually decreased, until today the enactment of this prohibitive law will have but a slight effect.

Moisture in Textile Fibres in Process of Manufacture.

The necessity for maintaining a uniform humidity in the air of cotton mills has long been recognized, and today appliances for diffusing moisture in the air are included in the equipment of every up-to-date cotton mill.

This matter of air moistening has not received as much attention from the manufacturers of wool fabrics. This has not been due to any lack of knowledge as to the effects of moisture on wool, but simply because the methods of manufacturing adopted in cotton manufacturing have been more advanced. Cotton manufacturers have been forced to use every available means of perfecting their processes, by reason of the uniform character of their product, and the consequent sharper competition on standard goods.

But gradually the great advantage of keeping uniform the humidity in the air of silk, linen, woolen, worsted and knitting mills has come to be recognized, and means adopted to effect this result.

The result of careful experiments made to determine the moisture absorbing qualities of various textile fibres have recently been published in Le Moniteur de la Teinture. A sample of each fibre was dried and weighed at 100° C., and then subjected to an atmosphere with humidity near to the point of saturation, and at a temperature of 100° C. The weight of the samples rapidly increased in this saturated air. Each sample weighed 100 grains in the dry state, and the gain in weight in the moist air was as follows:

Cotton . . .	23	grains	per	100 grains.
Flax . . .	27 6-10	"	"	"
Jute . . .	28 4-10	"	"	"
Silk . . .	36 5-10	"	"	"
Wool . . .	50	"	"	"

These figures indicate that cotton possesses the least and wool the greatest capacity for absorbing moisture. The wool showed that it had absorbed water equal to one half of its own weight, or more than double the quantity absorbed by the cotton. Everyone who has worked in any of the departments of a woolen or worsted mill, knows of the decided effect which moisture has on the fibre.

We find the wool grower and dealer stowing the wool in dark, damp places, that no weight may be lost while in their possession. Every woolen or worsted carder and spinner knows of the necessity of having wool moist while it is in process. The changes in the humidity of the atmosphere are quickly noticed in the running of the warps in the looms. Every weaver knows how much easier the picks go in if the filling is wet. In the spinning room, any change in humidity is reflected in the running of the work.

Electricity, so troublesome on dry, cold days, disappears upon the introduction of moisture into the air.

In the finishing we see equally marked effects. Woolen and worsted cloths lose from 5 to 8 per cent. in the operation of hot pressing by a rotary press. If the air happens to be moist this weight rapidly returns to the goods, but if the air is dry the goods are rolled up for shipment, and the weight is from 5 to 8 per cent. less than it should be. If a certain weight per yard is required, this means that the goods must be made so much heavier in order to answer the market requirements.

These practical illustrations are given to show the importance of keeping the air at a uniform degree of humidity when wool or any textile fibre is in process. Natural conditions, varying from the cold, dry days of winter to the moist, sticky dog days, give many different degrees of humidity, and consequently some artificial means of air moistening is a necessity.

A uniform degree of moisture in the air will cause the stock to work better on the cards. It will remove electrical disturbances, and prevent the unequal mixture of dark and light wool stock in the picking room. It will make the stock spin better. By keeping the weight uniform it will

make the spinners' reelings more accurate, give yarn of more uniform size, and consequently cloth of more uniform weight.

The air moistening apparatus which is so extensively used for this work in cotton mills is found equally valuable in woolen, worsted, linen and silk mills. The American Moistening Co., 150 Devonshire St., Boston, who control the leading types of air moistening apparatus, are finding a constantly increasing demand for these appliances in woolen and knitting mills as the great advantages of air moistening for woolen processes are better appreciated, and they are rapidly adding woolen and knitting mills to the hundreds of cotton mills already using their machines.

Felton's Mill Brushes.

There is probably no article, of which it may be more confidently stated that the best is the cheapest, than mill brushes either for power or hand. The brushes manufactured by S. A. Felton & Son Co., Manchester, N. H., are the result of fifty years' experience in this line. During this time the business has grown until this firm is now among the largest makers of power brushes in the world.

Their best revolving flat card brush, shown in the illustration, is made with a superior quality of Russia bristles, which are imported direct by the Felton Co. in order to get the best selection. The bristles are set in cement and pegged securely. The selection of the best bristles and setting them by the most approved method is a guarantee of the durability of this important part of the card. Mixed bristles are not recommended, for, while they reduce the cost somewhat, the cotton is liable to adhere to them and cause trouble.

We show an illustration of the cylinder comber brush. This is in all respects a duplicate of the best imported comber brush. Bristles wire drawn are the common refilling for these brushes, but fibre is also used,

FELTON'S CYLINDER COMBBR BRUSH.

and is said to do satisfactory work at a reduced price.

In the comber dusters recommended by this company, Russia bristles, set with cement and pegged, are used; mixed bristles are also used, and the brush can be set with pitch or wire-drawn. If set in cement, the bristles are sure to stay in, and there is no danger of small pieces of pitch getting on the rolls and making "laps."

FELTON'S REVOLVING FLAT CARD BRUSH.

The two qualities of card or grinder brushes are made in medium and extra stiff bristles. The bottle brushes or cylinder comber dusters, used to clean parts of the comber not easily accessible, and also to get between the spools on the spinning frame, are made with Russia bristles, twisted by a peculiar method into the wire.

We show an illustration of the Felton loom duster made with pure bristles set in pitch which is so tempered as not to powder. Dusters should be kept from oil as much as possible as the oil softens the pitch and shortens the life of the brush.

The Felton print works furnishers

shown in the illustration are used in nearly every print works in this country. They have been made with bristles and wood fibre mixed, and from pure wood fibre. The result of long experience with the different brushes leads the Felton Co. to recommend the wood fibre for this work. It is claimed that the wood fibre will not mat down,

FELTON FURNISHER FOR PRINTING MACHINE.

is not affected by acids or alkalis, does not hold the color, is easily cleaned with water, and costs less than half that of bristles. The fibre bristles are set in the furnishers with cement and pegs, pitch not being used on account of the bristles coming out, causing "splits" in the printing, besides damaging the engraved rolls. The doctor brushes are made from selected Russia bristles well secured in the block.

This firm manufacture a superior grade of dabbing brushes for Noble combs, shear brushes for woolen cloth, picker, reed and floor brushes, also brushes for sprinkling, scrubbing, etc., etc.

Special attention is given to refilling, and any kind of special brush is made to order. The close contact with users of brushes, which so large a business affords, makes them an authority on the subject, and leads to constant improvements.

Identification of Fibres.

While a great deal has been published on the identification of the different fibres in commercial use, much of this has not had a truly commercial aspect. It is frequently difficult to identify a fibre from the description given in commercial textbooks, especially where fibres closely resembling each other are examined under a microscope after the ordinary treatment or mount.

A writer in one of our foreign exchanges, in speaking of the microscopical identification of some useful fibres, says that the separation of the ultimate fibres by teasing is tedious, and often leads to a very unsatisfactory mount. The best way is to remove by chemical treatment the resins cementing the ultimate fibres into the filament. This is more difficult with some fibres than with others, those having a high content of silica being usually the most refractory. In this particular, sisal and manila are the most noteworthy.

In a commercial laboratory, where results should be obtained as quickly as possible, a quick temporary mount has to be made which will show the characteristics of the fibre necessary for identification; and in order to prepare the fibre for such a mount, a suitable chemical treatment not occupying too much time is a great desideratum. The best method consists in boiling the fibre in a 2 per cent. solution of caustic alkali, washing and suspending the fibre in water, and passing a stream of chlorine gas through it until it is thoroughly bleached and the gums thoroughly destroyed. This may also be done by placing the specimen in a solution of chlorate of potash acidified by hydrochloric acid. At this stage the filament is entirely destroyed, but the ultimate fibre retains the form of the filament. The material is then rinsed in alcohol, and mounted in Canada balsam in the usual way. After this treatment there should be no difficulty in teasing out the ultimate fibre.

The fibre may then be examined under a microscope or micro-photographed. The best method for the examination of fibres is with artificial light, using a polariser. The joints or markings on the fibre seem to have a different rotatory power, or at least they are brought into a more distinctive effect in relation to the rest of the fibre. This is also true in photographing, and the best photographs

have been obtained by using an arc light and polarizing the rays. The markings are more distinctly brought out when the analyzer and polarizer are in such relative positions that the background or field is almost totally dark.

To distinguish between sisal and manila is one of the hardest problems of fibre identification, but little trouble has been found after treating the fibres in the manner described above.

The characteristic appearance of manila is very much enhanced by the chlorine treatment, and the same is true of sisal. The sisal is very much coarser than manila, and tapers considerably more; when properly prepared the dark centre is seldom apparent. It has, however, after the treatment mentioned above, peculiar markings, having transversal cross-markings which appear to form X's upon the fibre.

The peculiar formation of the cotton fibre is so distinctive as to need no comment. Wool, with its peculiar scaly appearance, is also very distinctive, and where wool and cotton are found together they are readily distinguished by any ordinary mount. The above treatment has never been tried on animal fibre, for the reason that nothing would be gained.

Silk is also distinctive; it is quite even, but occasionally little nodules are noticed in the side of the fibre, and for this reason it is not as regular in width as manila. It has apparently no markings, and its ultimate fibres are also its filament.

Among the textile fibres the most difficult to distinguish one from the other are flax and ramie. They are used in the same class of work, when ramie is used at all, and have the same general microscopical appearance. Ramie, at first sight, looks very like flax, although, upon a minute examination, a difference will be observed. The ultimate fibre of ramie is usually coarser, the bamboo-like joints are larger and more marked, and have quite a different appearance from that of flax as seen with a moderately high-power glass.

Long vs. Short Bobbins.

There is probably no loss or waste in our textile mills greater in proportion to the outlay necessary for its prevention than the loss and waste caused by the use of bobbins shorter than the spindle and shuttle can carry.

Take the case of a woolen mill using a bobbin 6½ inches long. The spindle on the mule would carry an 8½ inch bobbin. Now what would be the advantage of substituting the longer for the shorter bobbin? In building the bobbin on the mule there is less yarn at the top and bottom than in the center, owing to the unavoidable taper and unoccupied space. This is true no matter what the length of the bobbin is, and consequently any increase of the length increases the space where the most yarn can be wound, namely in the center. Actual tests have demonstrated that one half more yarn can be wound on an 8½ inch bobbin than on one 6½ inches long. This means that the shorter bobbin would carry about one ounce of yarn, and the longer one an ounce and a half.

Suppose that the mill is weaving three run filling yarn in goods 72 inches wide in the loom. Under such conditions the short bobbin would carry yarn sufficient for 150 picks, while the long bobbin would carry 225 picks.

When threading the shuttle, and again when taking the empty bobbin out, there is more or less waste made. The weight of this waste varies with the size of the yarn and the character of the weaver. The coarser the yarn, the more waste is made, and every mill manager knows what a difference there is in weavers in this respect; but the most careful and painstaking weaver in the mill cannot avoid making a large amount of waste. Statistics of a weave room waste in a woolen mill using 6½ inch bobbins for filling show that the total amount of yarn waste taken out of this depart-

ment, when making a medium grade of goods, averages about 5 per cent. of the total weight of the cloth woven.

To reduce the difference between the use of these two sizes of bobbins, down to dollars and cents, we will estimate that a loom will weave 18 pounds of cloth per day. Now all the yarn waste from the weave room does not come from the bobbin. But the great bulk of it does, and if the total amount is 5 per cent. of the weight of cloth woven, it would be a fair estimate to put the bobbin down as responsible for 4½ per cent. This means 8/10 pound of yarn waste per loom each day, or 240 pounds per year. This, however, is not all made in putting bobbins in and taking them from the shuttle. More or less is caused by badly wound and broken bobbins, etc. Allowing 10 per cent. for bobbin waste from other causes we have 216 pounds of waste per loom each year made when bobbins are changed in the shuttle.

The cost of this waste is not only for raw material, but also for labor, supplies and the various mill expenses in the different departments of wool sorting, scouring, dyeing, carding and spinning. There is also the item of waste made in these processes, so that the cost of an all wool filling yarn ready for the loom at today's prices for wool could be placed at not less than 75 cents per pound. If the 8½ inch bobbin had been in use there would have been 50 per cent. more yarn on the bobbin, and consequently ⅔ as many shuttles changed, and ⅔ as much (or 144 pounds) of yarn waste made per loom in a year, or a saving of 72 pounds per year. This yarn had cost 75 cents per pound, but when in the form of yarn waste, is worth but 15 cents per pound, a difference of 60 cents per pound, and on the 72 pounds amounting to $43.20.

In a fifty loom mill this would be an annual saving of $2160 on weave room waste alone. There would be the same proportionate saving made in the spinning room waste caused by doffing.

Besides this saving there is a proportionate increase in production effected by the less number of doffings from the mule, and decreased number of stoppages of the loom for changing shuttles.

Then there is a small saving effected by an increased production due to this 72 pounds of yarn per loom being woven into cloth each year instead of being torn into waste.

It is difficult to estimate these various items in dollars and cents. We shall not attempt it. It means that doffings at the mule and shuttle changing at the loom is reduced one-third, and that the capacity of the two departments has been largely increased.

But of course there is another side to the picture. No economy is effected without cost. There is the cost of the new bobbins; then the long bobbin may not fit in the old shuttle; and lastly there is the trouble of changing. This last item will cost no money; simply a little exertion. There are large quantities of yarn in stock on short bobbins, and the change will cause a mix-up and trouble for everybody; that is all.

One hundred thousand bobbins would be an ample stock for a 50-loom woolen mill. At $9 per thousand this would be an investment of $900 in new bobbins. Most shuttles have sufficient room so that by cutting the wood away, an 8½ inch bobbin can be used. This can be done at the mill, but in any event twenty-five dozen new shuttles would equip the mill, and at $9 per dozen would cost $225. This added to the cost of the bobbins makes an outlay of $1125, combined with the exertion necessary to make the change, in order to effect a saving of $2160 per year in the weave room alone, besides the saving made in the spinning room, and the largely increased production of the mill.

Is there any place where a mill can invest money to better advantage? Warp yarn has generally been spun on long bobbins; the use of them for filling would make all the bobbins in the mill of uniform size, which is an-

other advantage.

Similar economies can often be made in changing the size of dresser and warp spools. Although our illustration has been taken from a woolen mill, the same principles apply to any other class of textile manufacturing. Mills are operated for years with short bobbins, the slight trouble and expense of changing preventing the economy.

Any bobbin shorter than the machinery can handle is an expensive luxury. They make good kindling wood, and should be put to that use with the utmost dispatch.

Notes of the Month.

The advantage which the first cotton mills established in the Southern States found in having the raw material delivered at their mill door, has disappeared with the increase in the number of mills. The surrounding country cannot supply sufficient cotton, of proper selection. They complain that the freight rate on their cotton, shipped by rail, is more than the rate for cotton carried to Northern mills. The railroads are likely to equalize these rates, but Northern and Southern mills stand about on the same footing as far as transportation of raw material is concerned.

Our imports of woolen fabrics continue large; for July the value was $2,069,739, against $1,776,173 for July, 1899. For seven months ending July 1900, the valuation of woolen goods imported was $10,284,396, compared with $8,423,512 for same period last year. The exports of both raw wool and manufactured woolens were trifling in both years.

We imported 7,688,920 lbs. of wool in July, 1900, as compared with 5,981,617 lbs. for same month last year; for seven months ending July, 1900, the figures are 103,564,443 lbs., against 51,806,249 lbs. for same period of 1899.

It is reported from Texas that one effect of the use of the round lap bale for cotton has been to increase the price which the farmer received for cotton, even when baled in square form. The farmer naturally gave the preference to the round bale, as his cotton brought a higher price; this caused the buyers who wanted cotton in square bales, to raise their bids until they equaled prices paid by the round bale men. It is said this increase amounted in some cases to from $2 to $3 per bale.

The imports of raw silk for July were valued at $1,121,577, and for same month last year, $1,319,228; the figures for seven months ending July, 1900, are $18,735,773, and for same period in 1899 are $15,373,807.

—The English knit goods manufacturers have completed a general trade organization by the formation of the Midland Counties Hosiery Manufacturers Association. Nearly all the English manufacturers are now included in four organizations, the other three having been in existence for some time. A rule has been made that no samples be sent out free, but that an extra discount of 10 per cent. be made on all samples sent out to order from.

Cotton goods valued at $3,202,650 were imported into the United States in July, as compared with $2,502,838 for same period last year. The imports of manufactured cottons for seven months ending July, 1900, amounted to $26,347,551, and for same period of last year, $20,928,722. The value of exports of manufactured cotton during July showed a small decrease as compared with July, 1899, the figures being $1,940,784 for July, 1899, and $2,037,379 for July, 1900

It is reported that a movement has been started in New Hampshire to reclaim the old-fashioned hooked rug. Better colors, more artistic designs and softer fabrics have been employed. The rag carpet is capable of similar improvement.

The Southern textile mills have been very free from labor troubles. Low priced labor has been the pre-eminent advantage the South has had

over the North, and yet the wages paid by cotton mills have been so much higher than the returns from farming, that the union organizer has found it difficult to make the Southern cotton mill hand dissatisfied. There were indications a short time ago, when business in the mills was active, that labor organizations would secure a foothold in the Southern mills, and although in the present depressed state of business the movement has died out, we may expect eventually to see labor organized in the Southern as in the Northern mills, and more equality in scale of wages. In Durham, N. C., there is a contest between mill owners and the help on the question of whether the labor union should exist or not, and the operatives are taking a very determined attitude.

The exports of cotton cloths to our new possessions for the month and year ending June 30th, 1900, are shown in the following table:

	June, 1900. Yds.	Year ending June, 1900. Yds.
Cuba	120,948	7,307,199
Puerto Rico	2,329,956	5,514,360
Philippines	73,720	327,571
Hawaii	92,483	3,247,594

The exports of cotton goods to Puerto Rico during June were very heavy, amounting to over 40 per cent. of the total for the year. This increase was due to the reduction of the duties on Puerto Rico imports, which recently went into effect.

18,541,772 lbs. of cotton waste, valued at $943,003, or over 5 cents per lb., were shipped from the United States during the seven months ending July, 1900, as compared with 9,095,401 lbs., valued at $335,726, or 3 7/10 cents per lb., for same period of last year.

Foreign Notes.

The German silk manufacturers of the Lower Rhine have formed an association with the object of mutual protection in cases where the operatives make demands for increase of wages. Each member of the association contributes two dollars for every one thousand dollars paid in wages to his operatives. This money is to be held as a fund to be used in case of strikes.

—The tendency toward trade combinations in the textile lines still continues in England. One of the latest projected is the United Bleachers' Association. The Calico Printers' Association is planning an issue of new stock for the purpose of taking additional concerns into the combine.

The facility and cheapness of modern transportation have permitted what is called the "improvement traffic" to grow to large dimensions in Germany, and special provision for this trade is made in the German tariff laws permitting free import and export of the goods.

This traffic is the bringing of partly manufactured articles into Germany, to have the manufacture completed, and the sending of similar goods abroad for a like purpose.

Large quantities of knitting yarn spun in England are shipped to Hamburg and other places in Germany to be dyed. German manufacturers send cloak material to England to be waterproofed. The German yarn manufacturers object to this trade in yarns, as they claim it injures the sale of German made yarns, while the india rubber goods manufacturers on similar grounds object to this improvement traffic in cloak materials.

Irish grown flax has in late years deteriorated in quality and the size of the crop is greatly decreased. Last year two Belgian experts were engaged to instruct the Irish farmer in the method of cultivation and scutching adopted in Belgium, where the finest flax is produced. Under the Belgian instructors, 15 lots in Brougshane produced flax valued at $62.35 per acre, as compared with $49.96 per acre for previous season with old methods. In Dromara 17 lots yielded $52.19 per acre under the Belgian system, as compared with $33.07 for previous season.

A number of English firms manufacturing shoddy and extracts, have combined under the name of the Extract Wool & Merino Co., with a capital of $1,800,000.

The director-general of statistics to the government of India estimated, in his third memorandum on the cotton crop, dated December 30, 1899, that the crop of 1899-1900 would be 641,327 bales, a little more than one-fourth of the crop of 1898-99 and of the average for the past five years, which was 2,308,424 bales.

In a recent communication to the French Academy of Sciences, a method has been proposed for extracting the oil of acetone from wash scouring liquors. The liquor is allowed to stand and ferment a week or ten days. The ammonia is then drawn off by boiling; sulphuric acid is added to remove the volatile fatty acids by forming combinations with them. The fatty acids thus obtained are combined with lime, forming salts which are dried and then distilled. About 16 quarts of the oil of acetone is obtained from 250 gallons of the scouring liquor at 11° Beaume.

The same conditions are found in the cotton manufacturing business in Austria that prevail in the United States. A boom in 1899, causing the erection of new mills, and enlargement of old ones, is now followed by a depression which is closing mills and stopping all new mill enterprises, except those which had become too far advanced to be suspended.

Official reports on the indigo crop in the northwest provinces of India, state that 188,645 acres were sown up to middle of April this year, as compared with 151,532 acres last year. Canal irrigation has been greatly extended. Prospects are favorable, and the condition of the crop in the last week of June was estimated at 75 to 90, taking 100 to denote a normal yield.

A process has been patented in England for rendering woolen cloth unshrinkable by chlorination, and at same time preserving the natural softness and elasticity of the fibre by an after treatment with salts of aluminum, zinc, tin, iron, or chromium.

The manufacture of embroideries is increasing rapidly in Switzerland. It is stated that 2000 machines have recently been started. Each machine requires one man and five girls. The wages of the girls average 40 cents per day.

According to a statement made by an English manufacturer before the Berlin Congress of Textile Workers, hosiery operatives in England work 54 hours per week. The men earn from $8.50 to $11.50 per week, and the girls from $3.65 to $6 per week.

In the linen mills of Bohemia the weekly wages of mechanics are $4.86, hacklers $2.92. These rates are so much lower than those in Irish mills that the latter find they can buy the low grade Bohemian yarns for less than the cost of manufacture in Ireland. The working hours in Bohemia are 68 per week against 56 in Ireland.

The large cotton mills at Orizaba, Mexico, place the state in which they are situated, Vera Cruz, first on the list of Mexican states, as regards consumption of cotton. The annual consumption in this state is 10,743,482 lbs., with yearly sales of manufactured goods amounting to $6,664,983. Puebla occupies the second place, bidding fair to outstrip Vera Cruz. Its annual consumption of raw material amounts to 7,994,225 lbs., with yearly sales of $3,931,724. The Federal District comes next with a yearly consumption of 4,862,756 lbs., and sales of $2,812,511. The State of Mexico possesses an immense undeveloped water power, which can be utilized for manufacturing.

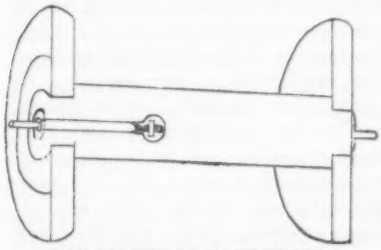
The Crandall Jack Spool.

New patents are interesting as promising something new under the sun, but a patented article which has been tried and not found wanting, is of the most interest to prospective purchasers.

The Crandall jack spool has been subjected to the test of actual use, and has been found satisfactory by the users.

This spool differs from the ordinary jack spool in its having a square gudgeon instead of a round one.

The illustration represents a Crandall spool in sections, in order to show



THE CRANDALL JACK SPOOL.

the gudgeon. The constant use to which jack spools are subjected in the mills, is apt to loosen the heads, and this is more liable to occur when the bolt is round, as any twisting strain on the head comes directly on the nut inside of the spool, and has a tendency to loosen it; in the Crandall spool the square bolt fits into a square hole, and any strain applied to the head brings the side of the bolt against the wood, and relieves the bolt just so much. The Cohoes, N. Y., Union Bobbin Works, manufacturers of this spool, have sold many of them to the mills in the Mohawk valley, and the business which they have built up on this spool is a guarantee of its merits.

This firm also manufactures a full line of bobbins and winders, and is fitted to do wood turning of any description.

Awards to American Textile Manufacturers at the Paris Exhibition.

In addition to the awards made to the American silk exhibits, which we note in another column, the following exhibitors of textiles received medals.

Grand Prizes:—To Clarence, Whitman & Co., exhibitors of white goods, and the Lorraine Manufacturing Co., Pawtucket, R. I., fancy cotton and worsted dress goods. The bulk of the first named exhibit consisted of goods from the Ponemah Mill, Taftville, Conn.

Gold Medal:—Wamsutta Mills, New Bedford, "Wamsutta" cotton fabrics; Potomska Mills, New Bedford, fine cotton fabrics; Aberfoyle Manufacturing Co., Chester, Pa., novelties in skirting and other cotton fabrics; Pelzer Manufacturing Co., Pelzer, S. C., brown cottons; Arlington Mills, Lawrence, Mass., woolen and worsted dress goods; Botany Worsted Mills, Passaic, N. J., woolen and worsted dress goods and men's wear woolens; Hockanum Association, men's wear woolens; Peacedale Manufacturing Company, Peacedale, R. I., men's wear woolens; Naumkeag Mills, Salem, cotton fabrics; Ballardvale Mills, Ballardvale, Mass.

It has been generally reported that the American exhibitors did not enter into open competition with the exhibits of the whole world, but that the awards were made by judging of the merits of the different American exhibits as compared with each other. It is now stated, however, that several of the American awards were won in competition with all other exhibits of same class at the Exposition.

Size of Mercerized Yarn.

Editor Textile World:

Does the process of mercerization change the count of yarn? That is to say, will 2/40s mercerized cotton yarn weigh 2/40 or not? I desire this information in order to decide how to figure the cost of mercerized hosiery.

COST.

Tension during the operation of mercerizing is an essential condition of the process. This tension prevents the contraction of the yarn due to the effects of the alkali, and any effect

which the process would have on the count of the yarn would depend upon the degree of tension maintained and also upon the loss of weight caused by the alkali liquor. The tension might in extreme cases be so great as to cause an actual increase of length, which would make the yarn finer.

The mercerizing process causes a shrinkage in the weight; 100 pounds of yarn in the gray would weigh, say, 95 to 98 pounds after being mercerized. Both the increase in length and decrease in weight have a tendency to make the mercerized yarn finer, and consequently, if a high lustre yarn weighing exactly 2/40 is wanted, it would be necessary to use a somewhat heavier yarn in the gray.

The increase in length is, however, a rather uncertain quantity, varying according to the efficiency of the process and sometimes disappearing entirely, or converted into an actual shrinkage.

We have been informed of one case where yarn, weighing 2/80s in the gray, weighed 2/73s when mercerized. This increase was due to insufficient tension having been maintained. In this case the shrinkage in length was greater than the actual increase of size would indicate, because the effect of the actual loss of weight, which made the count finer, was also overcome.

The sizes marked on mercerized yarn, when sold on the market, indicate the size before mercerizing. The length would depend upon the quality of stock and twist in the yarn, and upon the degree of mercerization secured.

We would advise our correspondent to weigh the mercerized yarn used in his goods, and base his estimate of cost on the actual size.

Artificial Cotton.

From time to time, there has appeared in the daily press, and sometimes in technical publications, articles relative to alleged discoveries of wonderful processes of converting pine fibres into artificial cotton. On several occasions in the past, samples of this alleged "pine cotton" have been submitted to us, but microscopic examination has shown them to be ordinary middling cotton, and unquestionably a natural product.

This artificial cotton discovery crops up in different parts of the world. The last time we heard of it, it came from the State of Washington. Again, it was reported in Germany, and the United States consul at Reichenburg received many inquiries concerning it.

This seemed to indicate so deep an interest that he made exhaustive inquiry, with the result that the German firm which was reported to be experimenting with the process referred him to a Breslau broking firm, who sent it to a representative in London, who handed it to an American chemist in Wilmington, Del. This chemist recalled that he had heard of these rumors, and had had two samples submitted to him. One was ordinary middling cotton, and the other long staple wool. It may safely be assumed that up to the present time no successful process of producing artificial cotton from wood fibre has been discovered.

WORLD'S WOOL SUPPLY.

The proportion which our imports of wool has borne to the total amount consumed in the United States, has varied widely from time to time, owing to the changes made in the wool tariff as well as the requirements of the trade.

This proportion of foreign wool imported dropped in 1894 to 14.2 per cent., the lowest point reached since 1868; and, in 1897 it rose to 57.8 per cent.; the average for nine years, ending with 1898, was 35.3 per cent. During the ten months ending with April of this year, we imported over 133,000,000 pounds of wool, or at the rate of 159,600,000 pounds per year.

The continued operation of a high duty on wool will doubtless cause a reduction of the wool imports, by in-

creasing the domestic supply, but for some time to come, as in the past, our mills must rely upon foreign sources for a portion of the wool consumed.

The foreign wool supply will always influence the value of our clip and the cost of raw material to our woolen mills.

A writer in Kuhlow's Review and Exporter has recently written on the Argentina wool supply. He thinks that in old countries, where husbandry follows the traditions of many past generations and centuries, we are not likely to find within the narrow limits of a decade any remarkable change in the type of fleece produced by these countries' flocks. Each breed has its recognized district whose topographical and climatic conditions have in process of time taught the husbandman the type of sheep best suited to his region.

A change in the types of wool produced by the comparatively newly developed countries of Australia and South America would speedily be felt in the world's woolen trade. Within the past ten years this change has taken place, and may be briefly summarized under three headings: (1) An increase of 200,000,000 pounds of medium cross and long-locked wools caused by the conversion, chiefly in Argentina, of 50,000,000 sheep from the merino type to the strong-wooled mutton type; (2) a decrease of 200,000,000 pounds of merino wool from the same cause; (3) a further decrease of 140,000,000 pounds of merino wool arising from the series of drought and bad seasons in Australia, dating back to 1894, through which today the merino sheep stock of that country has been reduced by 30,000,000 head.

In 1900 the world's wool supply of merino and fine wool will be 340,000,000 pounds less than it was in 1889, and the supply of medium crosses and long wools will be 200,000,000 pounds more than it was in that year. In this is the explanation why the rise in merino wools is greater proportionally than the fall in the combing sorts.

The conversion of 50,000,000 merino sheep into mutton cross-bred types, approaching the Dowe and long-wooled white-faced breeds, took place chiefly in Argentina. It was in response to the mutton trade which began with the export of frozen mutton in 1883. The breeder got a better price for the carcass; the cross wool in the first and second generation was still a "fine" cross—it fetched even a better price per pound, and the fleece was a heavier one. A change in sheep stock, either by conversion of breed or by decrease or increase, is not felt on the wool market at once. For some years after the general crossing of merinos with English breeds had commenced in Argentina, the aspect presented by the Buenos Ayres markets remained unchanged; merino was the distinguishing feature. Then, from one year to another the intermediate stage was passed; merino wool disappeared.

The total wool parcel from that country has not yet reached 400,000,000 pounds. Of this, 90 per cent. goes to the French, German, and Belgian manufacturers, France taking 42 per cent. of the total parcel. The remaining 10 per cent. is divided between the markets of Great Britain, the United States, and Italy.

Taking both the home production and the foreign supply consumed by the wool manufacturers of the Continent, of Great Britain, and of the United States, we find that Argentina contributed 3½ per cent. to the trade of Great Britain, 4 per cent. to the trade of the United States, and 43 per cent. to the combined trade of France, Germany and Belgium.

Fifty years ago, when sheep in that country were neglected by the majority of the stockmen, and little care was taken to improve their quality and free the pastures of burr-bearing weeds, the English manufacturer rejected Argentina wools as unsuitable for his trade. Apparently the British manufacturer cannot forget this, for the parcel of wool which finds its way from Argentina to the English textile industry is nearly as insignificant as

that exported from the same source to the United States.

Most of the wool of Argentina is sold direct on the Buenos Ayres markets to buyers who represent the Continental manufacturers. Seventy-five per cent. of the total clip is shipped today straight from the River Platte mart to the European industrial centres. Intermediary markets, such as Antwerp, now receive a greatly diminished parcel. In 1886 about 55 per cent. of the Argentine wool crop was shipped to Antwerp, and in 1896 the export to that centre did not quite reach 25 per cent.

For a number of years the Argentine Republic has been the largest buyer of fine and pedigree sheep in the world. During the past five years she has taken 80 per cent. of the value of the total sheep exported by Great Britain for abroad. Out of 42,909 sheep, valued at $2,285,000, which was the British export from 1894 to 1898, Argentina alone absorbed 26,640, valued at $1,182,000. For the past quarter of a century the Argentine breeder has been the best known and most frequent buyer of merinos from Germany and France. The United States of America have contributed Vermont merinos to the Argentine flocks, and New Zealand has supplied Lincolns from its best studs to the same market.

The present high standard which Argentine flocks have attained is little known except by those who have visited the River Platte within recent years. Argentina's climate and soil are particularly favorable for sheep breeding, and the wool acquires a softness and lustre not readily acquired in Europe. To these natural conditions has now been added a competent knowledge and care on the part of the breeder, and the extension of the railway system has been followed by the formation of agricultural societies, shows, and fairs in every district, bringing with them the familiarity of the points of each typical breed to the eye of the flock-master, and providing him with the market at his door in which he can buy the sires he needs to improve and renew the blood of his flocks.

She will be the most ready to respond to the cry for more merino. During the past autumn the large sale of merino types in all the fairs was remarkable. In July a selection of merino sheep from Germany fetched an average price of 510 dols. in Buenos Ayres. These are signs that the Argentine breeder has noted the scarcity of merino wool and is going to meet it.

With an annual increase in the volume of her wool parcel, the Argentine Republic has looked to the development of the wool manufacturing industry of North America for new markets for her wool.

Argentina is young and fertile; she must seek for new channels of exit for her constantly increasing output of raw produce.

The present appears to be a most opportune occasion for inviting the manufacturers of North America to extend their operations on the Buenos Ayres wool markets.

The Loom: As It Is and As It Should Be.

A paper read before the Shipley Textile Society, England, by A. R. Foster.

The present year appears to have been generally accepted as a suitable time in which to have a general stock taking of progress, and in spite of the universal differences as to the position of the year as the tail-end of one century or the commencement of another, there seems to be a wide-spread, if not unanimous, belief that the past hundred years have seen infinitely greater progress than any other similar period known to history. Taking the advance of applied mechanics and sciences, this is undoubtedly true, although it is a matter of doubt as regards many other subjects.

This satisfactory, or perhaps more correctly self-satisfactory, feeling has been felt by those engaged in the textile industries. There has undoubtedly been much headway made in this

branch of industry. Men have worked, and worked hard, to advance the science and art of weaving; and the present time may be suitable for making a general survey of what has actually been accomplished.

Supposing the advance of the power-loom is compared with some contemporary present-day appliances. A hundred years ago workable steam locomotives were unknown: now they traverse between every important town in the world. Steamboats had just been conceived as a doubtful possibility, and it is unnecessary to mention their present position in a maritime country like ours. Dynamatical electricity was unknown in a commercial form; electric light was only a wonder of the laboratory; the telephone, phonograph, and other everyday appliances were not only unknown, but were undreamt of. These inventions and others too numerous to mention have not only sprung up during the nineteenth century, but have attained a proficiency which would have been deemed impossible at their birth, and are now in a position which it seems almost impossible to improve. The civilized world has indeed reason to be proud of such progress.

Now turn to the loom—that is, the loom itself, apart from attachments such as dobbies, lappets, and similar appliances, which are only used for special classes of goods. What advance has the loom made? The power-loom in the early years of the century was, so far as its general arrangement was concerned, almost identically the same as the bulk of the looms now at work in the factories of England and the rest of the civilized world. There have been detailed improvements: weak parts have been strengthened; more care has been shown by planing frame joints and by the better finishing of parts; steel plays a more prominent part in the structure; but the motions and the way they are operated in the present loom are practically the same as in its ancestor.

[Prof. Foster has left out of consideration the automatic shuttle changing improvements, unless he classes them as attachments. Ed.]

There are only two courses to adopt in reviewing this position: either the loom has been sadly neglected, or its early structure was so perfect that improvement was an impossibility. In that case the loom of today is a perfect machine, doing perfect work, risking no damage, and making no mistakes. All manufacturers know to their sorrow that such is far from being the case.

The theory of neglect must now be considered. This is in a sense only partially true, but it is true nevertheless. The engineering, electrical, chemical, and other industries, have been advanced by men of training and education—men who have not only ranked as practical inventors, but who have possessed a cultivated knowledge of science and mechanics generally which has given them complete mastery of both the mathematical and the practical side of their study. Such men have not looked in the direction of the loom, or, if they have, it has been only a passing glance. The chief features of the present loom are attributable to the ideas of a parson, who, nobly as he worked, could not be expected to possess either textile or mechanical ability to any great degree. Nearly all later ideas followed in the same track, and those which did not were at once boycotted by the liberal-minded English artisan.

Probably the most urgent reform is needed in the picking motion. This is, in its present form, a most fruitful source of bad work, spoilt goods, and broken machinery, to say nothing of lost tempers and bad language. It is also the one most dangerous to the work-people of any in the loom, or, in fact, in the whole textile process. The above evils, however, are supposed to be taken as they come; but if a manufacturer studies his last coal bill for a few minutes, especially at the present price per ton, and then goes into his weaving shed, turns a loom over a few

times, first in its usual working condition, then with the picking sticks drawn out of work, he will at once realize which motion of the loom uses his power, steam, coal, money, or whatever he cares to call it. Notwithstanding this he will probably be the last to try a loom of a radically different build until he knows that a competitor is making money out of it.

Although there have been no definite tests and there are no reliable data as to the power consumed by the various parts of the loom, there can be little hesitation in allotting half the total power to that motion. In fast-reed looms there is probably more. A loom has been estimated by various authorities to consume from 1/6 to 1 H. P., according to its size and build, which means that practically 1/12 to 1/2 H. P. is utilized (or wasted) by the picking motion. All this power is necessary to transmit a few ounces of wood, along with a few ounces of yarn, across a few inches of reed space without any appreciable opposition. A shuttle in some form or other will probably always be necessary for wide goods; but whether it is called a shuttle or a carrier, or by any other title, surely some method more economical and more remotely related to the steam hammer and stone-breaking machinery will be devised before long.

Another objection to the present picking motion is the vibration which it causes, keeping every part of the loom and every thread in the warp in a constant state of oscillation. There is more in this than at first appears on the surface, and there is a great possibility that it is the cause of certain fabrics not being woven properly by power. The chief of these are silk goods of the finer class, the production of which is almost entirely dependent upon hand labor. Silk is the most elastic of fibres, which is probably a drawback rather than an advantage during manipulation, for it yields to every influence, however small, which yielding movement must have some effect upon the general arrangement of the threads and fibres. Hand-loom work is not resorted to for the sole reason that such goods will not weave in power looms, but because they cannot be woven properly.

Apart from waste of power and damaging vibration, there is expense in a more tangible form. The picking motion is most expensive in repairs: it has an insatiable appetite for new pickers, new straps, new buffers, new cones, and other castings, whilst many breakages in other parts are traceable to its influence. The ideal picking motion should act without vibration, should have continual control over the shuttle (not simply at each end of its travel), and should require no more power than is consistent with the work it is required to do. Such a motion has yet to be devised; but if one were made and demonstrated tomorrow, it would be ignored by manufacturers and hooted down by work-people; in fact, a radical betterment could only gain ground by the erection of a weaving shed by the inventors. Established makers would only be convinced of its advantages when their goods were being undercut in the market, and then, and not till then, would they see its merits.

It is somewhat risky, although not difficult, to prophesy the form the ideal picking motion will take. It will in all probability be electrically worked, and there is at the present time more than one idea in the laboratory stage which only requires for its development the brains of a textile expert, who has also a practical electrical knowledge. Unluckily the two are seldom combined, and we may have to wait a generation for the solution of what seems a most simple problem.

COTTON DEPARTMENT.

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Improvements in American Cotton Machinery.

GEO. OTIS DRAPER.

Read before the Southern Cotton Spinners Association.

(Continued from August.)

To illustrate the process by which inventions are developed, I will refer briefly to the progress of the Northrop loom, as an example. Our former firm of George Draper & Sons, having brought the high speed spindle to a point where further attention to detail seemed unnecessary, planned a new field of effort by selecting the loom as an example of cotton machine still requiring many hand operations, and set an inventor definitely at work in the old, always unsuccessful, field of automatic shuttle changers. This was on Dec. 10, 1888. Dozens of inventors, mainly in English localities, had reached the point of patenting similar devices, but all former attempts were unsuccessful, if judged by the test of practical use. Our attempt was noticed by Mr. James H. Northrop, a man who had formerly been employed by us as an inventor, but who left our works to engage in farming, for a several years' relaxation, returning to employment as a member of our tool room force. He began to give his evening thought to solution of the same problem, and after having made a few crude home experiments, approached me with the startling proposition that if given a chance, he could apply a shuttle changer within a week, that could be made in quantities for the cost of a dollar each. By invitation I visited his farm, to inspect a wooden model which was on exhibition in his hen house, and was sufficiently impressed to secure permission from the firm to get a loom, and see what he could do. The anticipated weekly period lengthened into several months, but a very fairly acting mechanism (hardly within the $1.00 class, however), was ready in July, 1889. Experiments were continued with this first device at the Seaconnet Mills, at Fall River, on several small lots of looms. During this trial, Northrop had the inspiration of changing the filling within the shuttle itself, and threading the shuttle automatically, by the movement of the loom. This started so favorably that the shuttle changing principle was dropped, and Seaconnet looms were changed over to adopt this new idea. The history of the next six years of experiment, outlines a record of patient perseverance, and undying faith, fit to parallel with many a more widely heralded endeavor. At no time within that period could success be definitely guaranteed, and the expense incurred was way beyond the limits usually allowed in such ventures. Mr. Northrop worked over his machine days, nights, and Sundays, and General Draper and I, who had charge of the campaign, lived in his experiment room for a good part of our working time. Other Hopedale inventive talent was also brought to bear on the various problems, with the result that looms were actually sold and running in a mill, by the spring of 1895. For convenient reference, and use in possible litigation, I have prepared a printed record of these experiments, which, for the period mentioned, includes over 1000 pages of a large sized volume, to properly note down the detail of the evolution. Apart from the outside trials at the Seaconnet and Pacific Mills, we equipped and ran a weave room of 80 looms, in our own works, for over a

year, giving a public exhibition of the advantages of the new system, before accepting orders. Even then, the conditions that might defeat our ends, when attempting to start looms in mills, were necessarily more or less problematical. We had sufficient faith, however, to accept orders for several thousand looms, before we had run any of the recent model in an outside mill, increase our plant, and risk, as has been conservatively figured, over one million dollars in the entire venture, before we were sure of success. Even with the splendid records made by these earlier sales of looms, we were by no means relieved from further anxiety. Different uses required different styles, different weights, different modifications, and different attachments. Continual improvements in detail caused us to make extensive changes in loom construction, making hundreds of expensive patterns, and special jigs, etc., worthless. After the first rush, orders came in more slowly, and as it was necessary to employ large forces of extra draftsmen, pattern makers, inventors, and experts, the expenses, on the whole, nearly overbalanced the profits. It was certainly somewhat disconcerting to find that, after laboring for several years to develop a new machine, returns figured less in the first few years of introduction, than if we had simply used our tools to make some standard trade machine, taking the regular trade profit. The tide, however, commenced to turn last year, and success came so suddenly that it has even proved embarrassing. We have been forced by excess of orders, to provide for the employment of at least 2000 extra men, to be employed on looms alone; and even then, the end may not be reached.

Such is the record of the development of one American cotton machine improvement, and it could be paralleled in modified detail by many another instance. It must not be forgotten that a complete machine of this nature involves the combination of dozens of separate inventions, each of which, like links in a chain, must do their part satisfactorily. In the development of each separate device, the failures mount up to incredible figures, we having in our museum 180 separate models of the shuttle, alone. Not only must the machine itself be brought to practical perfection, but the protection of each new idea by proper patents, demands an almost equal attention to detail. The success of a competitive machine stimulates keen competition from many others with inventive talents, who look upon a patent as a challenge to their power of evasion or substitution. It often happens that the profits of an introducer on the one hand, are more than balanced by the losses of the unsuccessful promoter, on the other hand, and courts of law usually claim a certain share of capital from either. While the American patent system has, as before stated, been of great value in protecting our inventors, it by no means affords an absolute guarantee of monopoly. The fact that patents may sometimes be evaded, actually stimulates a wider range of inventive effort. To illustrate the extent to which this faculty may be cultivated, it is only necessary to say that the Sawyer Spindle Company alone, has owned about 500 patents, which ring the changes on a small piece of mechanism, weighing hardly a pound, and composed of but four or five primal elements. Speaking as a manufacturer, I can affirm that without the protection of patents, such as it is, it would be folly to invent improvements in a trade machine, for the expense of the necessary experimenting and changes, would be a burden easily escaped by a competitor who simply copied the result. It certainly would be easier and simpler to stick to old patterns, if improvement were simply a form of altruism.

The general subject of improvements, brings up a question which has never yet been definitely settled, namely, how much credit is due the inventor, how much to the practical designer, and how much to the intro

ducer. The inventor is usually the only one that receives any public attention, as his name associates with the idea, no matter how much it may have been modified by others. The practical minds that guide the inventor's talent, or lick his crude idea into shape, remain unknown to fame; while the business ability that forces use of the new idea, is not usually considered as adding anything of great value to the combination. Of course many an inventor works his idea into practical shape himself, and some even continue their association by introducing their novelty, by their own efforts. The general run of such men, however, usually depends more or less upon the assistance of a designer and business associate. Should we judge of the three by commercial standards, it will be found that the introducer generally takes the larger share of the profits, which would seem to prove that talent in this department was rarer than in the other two lines. For instance, in cotton machinery there are hundreds of inventors to each machine builder, and few builders that care to handle their ideas. As some of the most wonderful ideas in mechanics have come to men by a flash of intuition, it seems perhaps unfair to credit them too highly, as against the years of toil devoted to the perfection of the new principle, or the nerve that risks largely in attempting to make the public appreciate the benefit that may be derived from it. The Whitney cotton gin, even after its first development and introduction, only had a product of 70 pounds of cotton per day. A modern gin often runs through over 4000 pounds per day. How many can name the men whose efforts have thus multiplied this original capacity? The original spinning ring and traveler was merely thought of as a patent office freak for years, before it gradually met with appreciation. Cartwright showed a warp stop motion in his patent of 1786; and yet an English writer in 1895, referred to the device as representing a still unsolved problem. Today we have 10,000 warp stop motions running in one mill alone. Many excellent ideas appear before their time; others lack the practical element, which remains to be furnished by a less creative, but more experienced mind. Certain others are simply the logical results of conditions forced by other innovations. The separator would have been useless before the advent of the high speed spindle,—likewise the revolving ring.

There are many curious facts connected with the history of cotton machinery improvements, which, of course, only fall within the knowledge of those behind the scenes. One of the most ingenious devices of the kind, was kept hidden for years (not by my company, however), waiting for certain patents to expire. Certain most ingenious ideas, of possible practical value, have often been shelved because their use would upset trade conditions, and disturb uniformity of product. Many a good little idea is not taken up, because the trouble of introduction cannot be repaid by the possible profits. Many a good big idea, suffers by reason of its demand on large sources of capital, by which to develop and introduce it.

The subject of cotton machinery improvements cannot be considered as complete, without some reference to certain difficulties with which the introducer of such improvements has to deal. Labor-saving machinery always meets with a more or less stubborn resistance by a narrow-minded class of help, and expensive changes are often less openly, but still as persistently opposed by the ultra conservative mill owner. Those, therefore, who thus endeavor to aid the world to progress, instead of being received with open arms, as it were, more often have the door shut in their face. Not that they should be unduly admired for their generous impulses, as, like other humanity, they are not afraid of a profit; but careful consideration of their more reasonable as-

sertions is always wise. In the early history of cotton manufacture, in England, mobs actually broke into mills, and destroyed new machinery. Even more recently, a public parade was held, in which the model of a slasher, then a novel machine, was carried through the streets, to be buried with certain formal obsequies. In this country antagonism to new ideas has been less open in character, but still formidable enough at times to make the process of introduction quite a serious hazard. I am pleased, however, to relate that such exhibitions of prejudice have not been manifested by this immediate section of our country, the South having shown a readiness to adopt improvements, that encourages our trust in human nature. I find it recorded in the New England Cotton Manufacturers' records, that in Nov., 1881, my grandfather, George Draper, made a very similar statement in the following words: "I want to bear testimony to this fact, that all those Southern people connected with manufacturing, are terribly in earnest. They are bound to learn everything that they can about manufacturing, or anything that they undertake. They seem like new converts, so to speak." An address on the subject of improvements, therefore, seems rather out of place in this present environment, for Southern manufacturers have already made themselves fully acquainted with all the modern improvements known to the manufacturing world. More new and improved cotton machinery is shipped South today, than is required by Northern demands, and the general proportion of mill equipment in this section, is certainly more up to date than in the older Northern mills. Certain economists of high standing, have figured that the principal advantage which has produced the rapid growth of the Southern cotton mill industry, is principally to be found in this use of newer processes; and it certainly is not for me to dispute any such contention. No improvement can be forced on intelligent men, unless its use is profitable. Many, however, let their chances go by, waiting, in the hope of enhancing that profit. Men still postpone their trip to Europe, hoping that a bridge will be built within their time.

We are all working toward one definite end, namely, to cheapen and better the production of American cotton goods, and make our exports of cotton in rolls of cloth, rather than in bales of fibre. This present gathering proves that mill men are willing to let each other profit by all sources of general knowledge, and the man with the machine stands ready to unite his mechanical skill with your business ability, in a common onslaught on cost of production. The way to improve, is to use improved methods.

Spinning Cotton Waste.

The large quantity of cotton waste exported from the United States calls attention to the foreign methods for utilizing this stock. During the 12 months ending with June, 1900, we sent out of the country 25,642,400 pounds of cotton waste, being more than double the quantity exported in same period of 1898. This increase may be due in some measure to the rise in price of raw cotton.

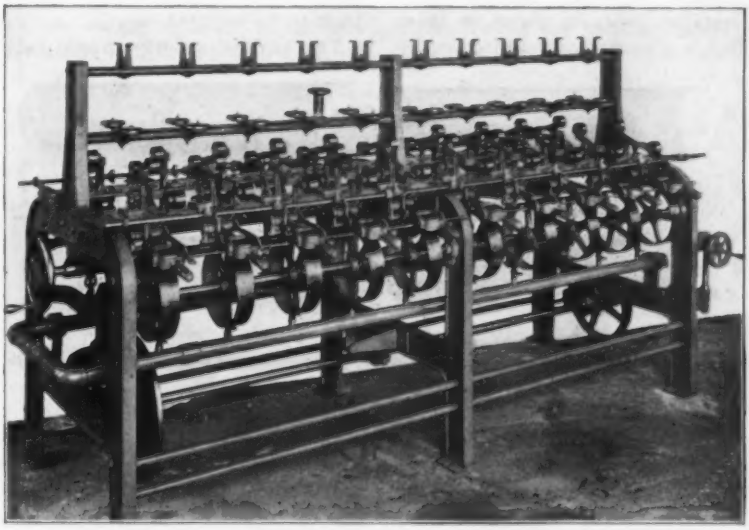
Until recent years England took the lead in this industry, but within a few years a large share of the business has been transferred to the Continent. The machinery for carding and spinning this stock is still made in England. There are a few concerns in this country that are successfully spinning cotton waste, and some of the large cotton corporations have cards and spinning machinery for working up their own waste, and sell the yarn for knitting purposes.

The business of spinning cotton waste, as a separate business, does not promise large returns and a profit could be expected only by securing the most approved machinery and adopting the best methods known. The foreign manufacturers naturally decline to furnish Americans with in-

formation as to their business, but their show of secrecy is probably misleading, and cotton waste spinning is no more a secret than is woolen or cotton spinning. It simply requires the best machinery and skill for its success. The recent Consular investigation of foreign methods presented no new facts, but aroused new interest in the subject.

Yarn Singeing or Gassing.

Gassing or singeing is employed to remove the numerous ends of fibres, which stand out from the surface of the yarn, and is necessary where a round, smooth, solid thread is required.



THE KNAPP YARN SINGEING OR GASSING MACHINE.

A gassing machine made by Charles H. Knapp, Corner Wait and Rye Streets, Paterson, N. J., is shown in the illustration. The yarn to be treated is placed in the rack at top of machine, which is so arranged as to receive yarn on either cops, cones, or spools; the spools can be in either a vertical or horizontal position. The yarn passes through porcelain guides and passes over small grooved rolls backwards and forwards as many times as is necessary. The yarn crosses itself in passing from one roll to another, and under this crossing point is placed a gas-burner, which singes the thread thoroughly.

After leaving the grooved pulley, the yarn passes to a drum winder provided with a quick traverse. This is plainly shown in the illustration. The machine is built so that, when an end breaks or the machine stops, the yarn is removed from the flame. When starting the machine the winding begins before the flame touches the yarn. The rolls over which the yarn passes are made of aluminum, bushed with brass, and the machines are constructed with any desired length of traverse, or number of burners. It is well built and provided with all the desirable appliances required for singeing yarn by the most approved methods.

Silk-Like Surface on Fibres and Fabrics.

A method of imparting the appearance of silk to fabrics has been invented in England. The inventor in explaining his device says:

On examining a web of silk it is found that its surface consists of a number of furrows or ridges, and

these furrows are brighter on the top, and somewhat wider at the bottom than the top, and that these intermediary spaces are somewhat wider than the ridge itself. Also, that a line runs across these ridges at an angle, which line consists of a ridge having the same intermediary space as the first.

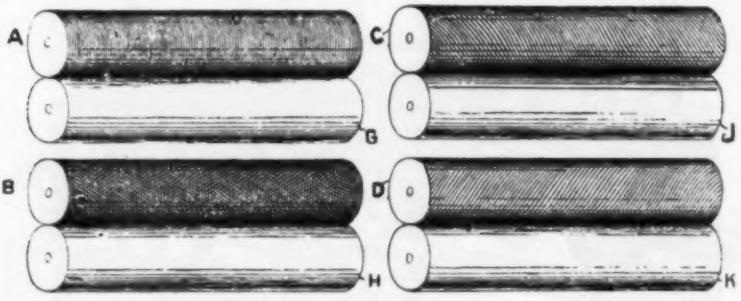
The silk finishes now being produced are obtained by means of rollers or serrated or scored calenders, the action of which is to produce a bright surface on the whole of the web, consequently, when the webs are exposed to the light, at certain angles, a metallic lustre is given to them, which is a most serious objection, because, in silk webs, this metallic lustre does not exist.

This invention consists in making the grooves on the calender or roller at various distances and sizes:—see A, B, C, D, which are each grooved in different and distinct directions at various intervals. Also see calenders or rollers G, H, J, K. These are plain, polished, or burnished calenders.

The process consists in passing a web of cotton, or other material, through rollers, either A and G, B and H, C and J, or D and K, with its face surface in contact with any of the calenders G, H, J, or K. The result is that the grooved calender will force a certain portion of the face of the material into contact with the plain calender, and thus produce the new silk finish.

The production of a bright surface on the top, and not on the bottom of the ridge, or a brighter surface on the top, than on the bottom of each ridge, could be accomplished by bringing that portion of the calender which is to produce the bright top of the ridge into contact with the web, when between the calenders, with a greater pressure on the smooth calender, G, H, J, K, than the intermediary portions would receive, consequently, this would make these portions brighter, whilst they in their turn would protect what was required to be dull, and for this purpose the web should pass through the calenders with its face presented to the plain calender and its back to the serrated one.

The serrated calender would be ingrained or sunk in any direction, and it could be also sunk or not, to show the diagonal line mentioned, or this could be produced with a second roller or calender.



MACHINE FOR GIVING SILK-LIKE SURFACE TO FABRICS.

Cotton Industry of Italy.

The growth of the Italian cotton industry has caused a corresponding increase in the importation of the raw material, and, as the greater percentage of this comes from the United States, the following notes and statistics—taken from the most excellent work on Italian exports by Dr. Leopoldo Sabbatini, secretary of the Milan Chamber of Commerce, and just published—may prove of interest.

In 1871 there were only 10,500 tons of raw cotton imported into Italy. In 1881 this had increased to 48,500 tons; in 1891, to 92,600 tons; and in 1898, to 132,900 tons. This increase in the im-

portation of raw material and the building up of the Italian cotton manufactories has necessarily caused a decrease in the importation of manufactured goods and even developed the export of cotton manufactures. The import of spun cotton, from a maximum of 13,600 tons in 1876, has been gradually reduced to about 700 tons.

The imports of cotton textiles were quite extensive until 1887, averaging about 11,000 tons per year from 1871 to 1880, and about 13,200 tons annually for the succeeding seven years. In 1888, owing no doubt to the new customs duties, the importation of cotton textiles fell to about 7100 tons and kept at that amount until 1891, when the home production was better able to meet foreign competition, and the imports were gradually reduced to 1700 tons in 1898.

There had been a slight exportation of cotton manufactures before 1888, but it is only since 1894 that the exportation has exceeded the importation. The importation of unbleached spun cotton, formerly quite large, was by 1898 reduced to a very small amount. On the contrary, the importation of twisted cotton and sewing thread has not decreased to any extent since 1890. The finest of these are still imported, especially from England, as the Italians do not seem to be able to produce them yet, at least in any appreciable amounts.

The importation of the plain cotton textiles has decreased to a marked extent; but that of brocades, embroidered textiles, and velvets, though of not much importance, has remained nearly stationary. The exportation of plain dyed textiles has increased more than any other; it increased nearly fourfold from 1890 to 1895, remained about stationary from 1895 to 1897, and then almost doubled. The exportation of the printed and unbleached plain textiles has also increased, while that of the bleached goods has remained unimportant. The export of embroidered textiles seems to have fallen off from the very small amount it attained in 1880, and that of velvets is of no account whatever. Italy does not seem able as yet to take a prominent position in the manufacture of these goods.

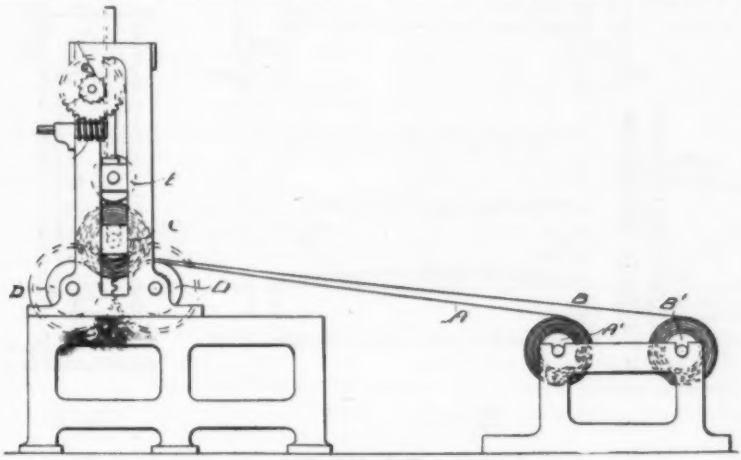


Fig. 1.

Fixing the Finish on Cotton Piece Goods.

The advantages claimed for this process are that it produces a finish which is not only permanent, but has also the characteristics of cotton piece goods finished by hot pressing, and that the texture looks closer, feels smoother, and has brilliant water marks on the back of the cloth. The

process is especially applicable to that class of goods known as "Italians," such as are generally used for the lining of coats.

Fig. 1 is a side view of a machine for rolling the cotton piece cloth to be finished along with a damp cloth. The cotton piece goods after being finished by all or any of the ordinary and well-known methods of glazing are each rolled together with a damped cloth upon a perforated roller, so that the surface of the finished cotton piece cloth is completely covered by the damp or wet cloth.

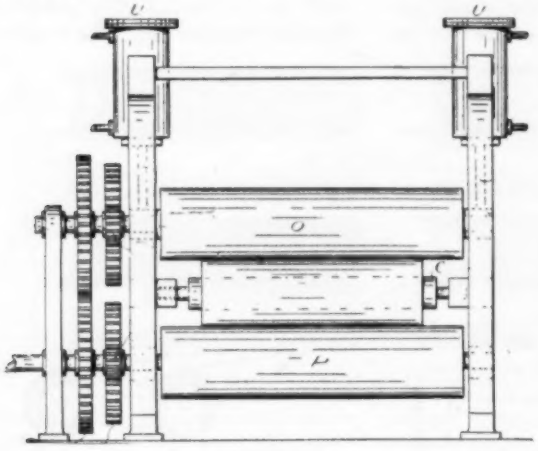


Fig. 2.

Fig. 3.

This portion of the process may be carried out by an ordinary rolling-machine, such as is shown by Fig. 1, in which the cotton piece, calendered or otherwise ordinarily finished, cloth A upon roller A′ and the damp or wet cloth B upon roller B′ are rolled together upon a perforated roller C, placed between the rollers D D and E. The bottom rollers are rotated in any convenient manner. The perforated roller rests upon the bottom rollers and the heavy top roller rests upon the perforated roller, the rollers C and E being rotated by friction, and the combined cloths wrapped tight around the perforated roller.

When the combined cloths have been wrapped tightly around the perforated roller, the top roller is raised. The roll of cloth is then placed between the rollers O and P, Fig. 2. Pressure is applied to the top roller by the hydraulic cylinders U U, and the rollers are rotated, thus calendering the combined cloths for some time under hydraulic pressure.

On removal from the hydraulic calendering-machine the cloth is wrapped in a covering of canvas or other open fabric, and placed in a steam chest, shown in Fig. 3, which is closed and made steam-tight. Steam is then introduced by the pipe Y, and passes through the cloth and perforated roll, escaping through the opening at C′.

After steaming for a period varying according to the weight and quality of the cloth the luster is permanently fixed on cloth A when the cloths are unrolled from the perforated roller C.

The material of the damp cloth B used along with the cotton piece-cloth A to be permanently finished is preferably of fine quality, such as is commonly called a "face-cloth," from which all grease, size, and other foreign matter have been removed. By the adoption of fine quality damp cloth B of this class it has a distinct influence in giving a close appearance to the texture of the cloth to be permanently finished is obtained.

WOOLEN DEPARTMENT.

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Nature of the Wool Fibre in Relation to its Textile Treatment.

CHAPTER V.

DAVID PATERSON, F. C. S.

Erratum: In the chapter appearing in July issue, page 80, second column, "The following analysis of wool fat" should be The following analysis of the ash of wool fat.

In our last chapter we referred to the disadvantages of the absorbent property of wool for sulphurous acid gas (SO_2); in the steaming of carpet yarns we sometimes find the same drawback.

If there be not a sufficient outlet for the steam from the steam chest, the steam becomes highly impregnated with sulphurous acid. This acts injuriously on many of the colors printed on the yarn, and in some cases may decolorize the coloring matters. Delicate shades of slate or blue made from acid extract of indigo have been found quite reduced, or bleached by the action of the sulphurous gas present in the steaming chests.

During the process of steaming, the SO_2, absorbed in the yarn, is liberated by the action of the acids, always present in the color printing pastes.

In steaming wool, great care must be exercised in watching that the temperature inside the chest does not rise too high, otherwise, as we have already learned, the wool will be injured.

The presence of sulphuretted Hydrogen ($S H_2$) in the vapors of the steam chest shows that a gradual decomposition of the wool is taking place. The evolution of this gas in steaming may readily be shown by placing a cotton swatch padded with acetate of lead inside the chest, to steam along with the yarns. The swatch will be perfectly white and colorless when put in; but when withdrawn after the steaming operation, it will be found colored a deep brown, owing to the formation of the black sulphide of lead. In the steaming of printed woolen fabrics or worsted yarns it is most important that no excess of mordant is employed in the printing color, otherwise, the fibre becomes harsh, lustreless and brittle. Even oversteaming alone without the presence of any mordant, acts injuriously on the fibre.

Fig. 1, for example, represents the difference in appearance between the unsteamed and over steamed wool. The steaming tends to shrink the fibre, and make the exterior scales lie flat and firm to the stems. If the yarns are closely packed together, the closing of these scales produces the awkward and annoying matting or "felting," that is sometimes experienced in handling yarns which have been over steamed.

If an acid is used in the printing paste, especially a mineral acid like sulphuric or hydrochloric, the scales are opened, and their points stick out and present under the microscope, a more serrated appearance. If an excess of acid be employed, the effect is heightened, until it gives the wool a harsh, unpleasant feel to the touch. For example, Fig. 2 represents a wool fibre after steaming with an excess of oxalic acid in the color printing paste, and shows the edges of the exterior scales opened outwards.

Some acids and mordants have a very mild action on the wool fibre, such as tartaric acid, vinegar, lactic acid, alum, etc., while others of a stronger and more corrosive nature have a highly injurious action, and re-

quire to be used with caution. Tin crystals, oxalic, nitric and hydrochloric acids, must be used sparingly, if they have to be used at all.

Fig. 3 shows the effect produced on

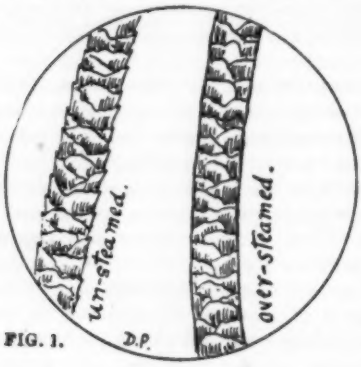


FIG. 1.

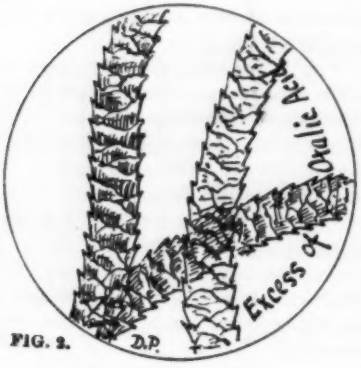


FIG. 2.

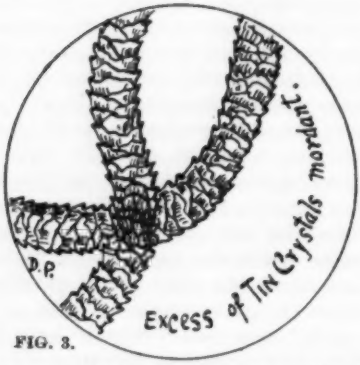


FIG. 3.

the wool fibre by using an excess of tin crystal mordant. Stannous chloride, ($Sn\ Cl_2{:}2\ H_2O$). In this instance the wool was harsh and unpleasant to the feel, and had lost much of its strength. Wool mordanted with tin salts is apt to become stained brownish from the formation of a sulphide of tin, caused by the sulphur naturally present in the fibre.

The action of chlorine on the wool fibre is most interesting and is also of the highest importance. Mercer was the first to discover that wool treated with chlorine had a great affinity for coloring matters; and indeed the printing of many kinds of woolen fabrics such as delaines, perhaps could not be accomplished, were it not for this wonderful mordanting property of chlorine.

In practice, the goods are passed through a very dilute solution of chloride of lime bleaching powder, or sodium hypochlorite and afterwards through a dilute acid bath when the chlorine becomes liberated within the fibre. This forms the "prepare" necessary for woolen goods, before being printed. Were they not so "prepared" or mordanted with chlorine, the colors would not fix on the fibre properly. In speaking of the absorbent property that wool has for gases, it may be of interest to mention in passing, that it shows a like affinity for odors and perfumes. This explains why the woolen curtains of a room, and woolen clothes retain so tenaciously the smell of tobacco. Often a non-smoker, after being in a smoking railway carriage, will find his clothes smelling of tobacco for a day or two afterwards.

Wool treated with chlorine acquires a yellowish tinge, and it is therefore quite impossible to employ this reagent in wool bleaching, although it is used for bleaching the vegetable fibres like cotton and linen. The only bleaching reagent which can be employed for wool, is, as we have already described, sulphurous acid and sodium or hydrogen peroxide.

We hope that these short articles may have proved of practical interest to many of our readers.

(Concluded)

Wool Sorting by Unskilled Labor.

The substitution of machine for hand labor in sorting wool, which was recently reported in the daily press as having taken place in one of the large worsted mills of the country, and causing a strike, turns out upon investigation to be simply a modification of the hand sorting of wool by which the wool is graded and skirted and then put through the regular process of worsted manufacture. No two mills sort wool exactly the same, and modification of the process are frequently made in the same mill to suit different classes of yarns and goods. One familiar with the circumstances writes:

Editor Textile World:

I think I can explain to you what has given rise to the report that machinery has taken a hand in the sorting of wool. I have not seen the newspaper article concerning the large reduction in prices paid for sorting wool, of which McLaren says, "A perfect knowledge can only be gained by years of experience," but it is quite true that such is the case, and it came about in this way;

This worsted mill had been paying 75c. per 100 lbs. to experienced woolsorters, for sorting wool, according to approved methods, and which I believe to be absolutely necessary to produce a good strong level yarn.

The new system is as follows: If the wool is to be spun to 30s the foreman grades the fleeces, as near as he can to that size, but some fleeces will have a certain percentage of 36s or even 40s in them, while others may contain a percentage of 26s or 20s; the idea seems to be, to have the fine and shorter wool, offset the coarse and longer staples, and by that means get at an average 30s.

When the fleeces have been graded, all that is done to them, is to cut the strings off, take of the britch and any tar there may be, and put it into the basket, something which any bright boy could do, with a week or two's tuition, and for which they pay 35c. per 100 lbs., a saving of 4 mills per lb., and thus dispense with expert woolsorting. The sorters in this case objected to working on such a slipshod method, even at 35c. and six of them quit and have gone elsewhere; they would have been removed anyhow, as six men are keeping the mill going, and are now earning $7.50 to $9.00 per week, as against $12 to $13.50 before.

It might be well now to analyze the method, from the standpoint of economy, and try to find out where the saving comes in.

The reduction in the price paid is roughly speaking 100 per cent.—or a saving on the finished product, of say ¾ of a cent per lb. So far, so good; now we will consider the other side. The fleeces not being properly sorted, are not cleaned, i. e. the short, kempy and seedy sorts, and I suppose the burrs, to a large extent are left in, besides the varying length of staple, and quality going to make up a conglomerate whole. What is the result? My view of it is as fonows:

1st: Washing. In the washing more soap will be used, and more frequent changes of water needed, and the wool wil not come out as clean.

2d: Carding. The cards will need cleaning or stripping sooner than if the wool was fairly clean to begin with, then the card waste will sell for cents less per pound, and finally there will be far more foreign matter, and nibs in the carded balls, than there should be, which will be left for the comb to remove.

3d: Combing. In this important operation, the wool is finally cleaned, all the impurities being combed out and separated along with the noil. Now the noil is the most important by-product made in a worsted mill, the variation in price paid for it ranging as high as 15 or 20 cents per pound; therefore, it stands to reason that the noils will be of a low grade, and will not bring the best market price, by

any means, probably 5 to 10 cents less than they otherwise would.

4th: Drawing. It is now assumed that the drawer receives the tops in a fit condition, to make a roving to spin to 30s; well, by and by he finds out, somehow or other, that it don't run good, first this girl, and then that girl, complains that her machines are going bad; the drawer looks into the matter, or pretends to do so in many cases, and then says "I guess it is all right, let it go;" but still he notices that the slivers, as they run off the bobbins in the creels, do not have that nice, smooth, round appearance that a good drawer likes to see; he also notices that his daily waste account is several pounds larger than should accompany good work.

The roving goes to the spinner looking rather ragged or wild, but otherwise seems to be all right; by and bye, the spinner complains that this new lot does not spin good, that it is all going to waste etc. etc.; then, usually the Supt. makes an investigation, the yarn is found to be twitty and uneven, then the drawer is taken to task, for making such a poor roving, "the worst that has ever been made in the history of the mill," etc. etc., when the fact of the matter is, that the poor fellow, could not make a good roving, however hard he tried, out of those identical tops.

Now let us try and find what the trouble is that it draws so bad, and spins worse. The staple will run from say 2″ to 8″ in length, now to bring the fibres parallel to each other, they should be as nearly uniform in length as possible, and wool sorted for a staple of 4″ to 6″, will make a more level yarn than a staple of 2″ to 8″ will; for it will take 4 fibres 2″ long placed end to end, to equal 1 fibre 8″ long, so that if the drawer should set his machine for 8″ stock, the fibres that are 2″ long will have to travel 6″, after leaving the nip of the back roller, before entering the front rollers, with nothing to support them except the bulk of the other fibres passing along at the same time, and so on through all the operations, down to the spinning frame which will likely be run with the rollers 5″ or 6″ apart, and then those in charge of the mill wonder how it is, that the yarn is uneven, and have to dispose of it, for what it will bring, instead of it selling for the market price, besides losing all through the mill, either in production or harmony, or dollars and cents in order to effect a saving of 4 mills per pound in the sorting room.

I don't think that the machine is yet invented, that will sort wool, although some manufacturers have conceived the idea that their machinery can be made to cover up the lack of sorting, but I think they will find it a costly experiment in the end.

WORSTED.

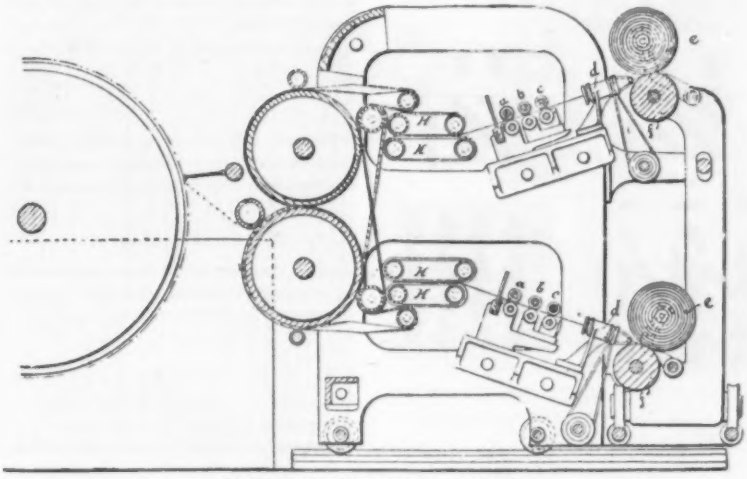
We can agree in the main with the views expressed by Worsted in regard to sorting wool for worsted yarn, but it would be a mistake to adopt any particular method of sorting for all kinds of goods. It is the one department in the mill in which judgment should play the most prominent part in deciding what process should be adopted.

Sorting wool for fine worsted yarn and sorting wool for a low or medium grade of woolen goods are two very different things. If the methods suitable for the first named work are used for the cheaper grade, we will throw out sorts which would be all right if left in, and which when made into a separate quality must be sold at a reduced price, or worked up to less advantage than if left undisturbed in the fleece. We mention these two extremes, fine worsted yarn and low woolen goods, simply to illustrate the point. The method of sorting must be determined by the goods to be made. Good judgment alone can settle this point, and if the superintendent of that particular worsted mill finds he is getting good yarn, and his waste and noils do not show enough added loss to offset the saving in wool sorting, he would doubtless argue he

was right. There are several very successful worsted mills pursuing similar methods to those outlined above and presumably have figured the comparative cost.

Condenser for Woolen Card.

A machine for condensing woolen roving, patented recently in England, is shown in the illustration. The fleece, as it is stripped from the doffer, passes between the fleece dividing aprons H H, and then the roving is run through a set of drawing rollers a, b, c. The whirls D put twist into the roving to make winding possible. The spools E are vibrated in order to wind the roving evenly.



CONDENSER FOR WOOLEN CARD.

Speed of French Worsted Cards.

J. Renel in his recently published work, "Cards and Carding," gives the following table showing the approximate sizes and speeds of French worsted cards:

	Diam. In.	Rev. per min.
Feed rolls,	2	1½
Burr cylinder,	11¾	25
Burr guard,	4¾	400
Cylinder, Breast,	23½	70
Doffer, "	14½	10
Workers, "	6	10
Strippers, "	3½	80
Fancy, "	8	250
Main cylinder,	43	100 to 120
Doffer,	32	8
Front workers,	8	6
Rear workers,	8	5
Strippers,	4½	125
Fancy,	11¾	400 to 425

For carding coarse wool he advises either reducing speed of main cylinder, or, if this is not practicable, increasing speed of the workers, doffers and feed rolls, while for fine wool the speed of main cylinder is increased, and the other parts slowed up.

Designing Fancy Cassimeres and Worsteds.

ARTICLE II.

FRED BRADBURY.

With the same make of cloth (No. 5), and weave as Figs. 6C and 6E, but by a judicious combination of two elementary schemes of coloring, a very useful form of plaid is produced, effects of which are shown respectively at Figs. 6D and 6F; the weave in each instance is the 4 leaf twill. The order of coloring the warp and weft is 4 dark, 4 light, and 2 dark, 2 light, respectively as shown by the markings below and at the side of each figure.

Two patterns produced by the combination of Figs. 6D and 6F are supplied at Figs. 7 and 8, which are photographs of the actual fabrics. The warping and wefting particulars for Fig. 7 are supplied below.

Warp:
2 black
4 white } 24 threads (as Fig. 6D)
2 black

2 white
2 black } 24 threads (as Fig. 6F)

Total, 48 threads in one repeat.

Weft:

4 black, 4 white } 24 picks (as Fig. 6D)

2 black, 2 white } 24 picks (as Fig. 6F)

Total, 48 picks in one repeat.

The particulars of warping and wefting for Fig. 8 show a slight modification of the above which is as follows:

Warp:

2 black, 4 slate, 2 black } 24 threads (as Fig. 9)

2 slate, 2 black } 12 threads

2 cardinal, 2 black } 4 threads

2 slate, 2 black } 8 threads

Total, 48 threads in one repeat.

Weft:

4 black, 4 slate } 24 picks

2 black, 2 slate } 12 picks

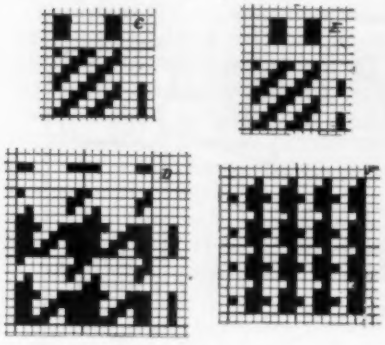


FIG. 6.

2 black, 2 cardinal } 4 picks

2 black, 2 slate } 8 picks

Total, 48 picks in one repeat.

The two threads of cardinal substituted for the two threads of slate produces in the above style an overcheck over the main check effect. The 1 and 1 scheme warp and weft for 24 threads and the 2 and 2 scheme warp and weft for 24 threads produce an exceedingly good plaid effect in this make of cloth.

If now we simply change the weave from cassimere Fig. 6C to the common hobsack Fig. 9, and arrange the warping and wefting scheme to suit the new design, a fancy suiting and also a trousering style are produced which are both neat and effective; Fig. 10 is a representation of the former and Fig. 11 of the latter. The following is the arrangement of the colors for Fig. 10. First end and pick of the design corresponds with the first end and pick of the warping and wefting scheme.

Warp:

4 dark brown, 4 white } 24 threads

2 dark brown, 2 white } 24 threads

Weft:

4 dark brown, 4 white } 24 picks

2 white, 2 dark brown } 24 picks

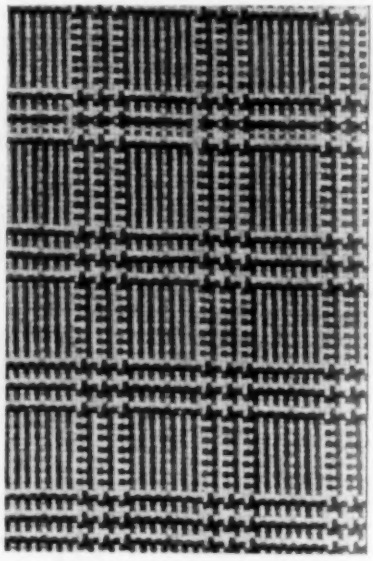


FIG. 7.

In the trousering style, Fig. 11, the warping scheme is exactly in the same order as that of Fig. 10, but the wefting arrangement is all 4 dark brown, 4 light.

The preceding styles of effect as given at Figs. 5, 7, 8, 10 and 11, when used with more subdued colorings and the following make of cloth, produce very satisfactory fabrics in a heavier weight, which are especially suitable for men's wear.

Cloth No. 3. (Particulars of make.)

Warp: 2/36s botany, 14s reeds, 8s; width in reed 64 inches; finished width 55/56 inches.

Weft: 2/36s botany, 108 picks per inch, finished weight per yard 21/22 ozs.

Weave, 1st plan, double cassimere, of which Fig. 12 is a complete design, and Fig. 13 is a cross section through the warp, which shows the fabric to be double stitched i. e. bound by the face warp passing under a backing thread and a backing end over a face pick.

Fig 13

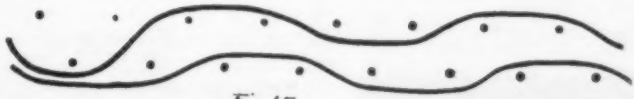


Fig 15

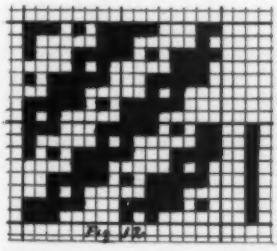


Fig 12

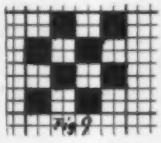


Fig 9

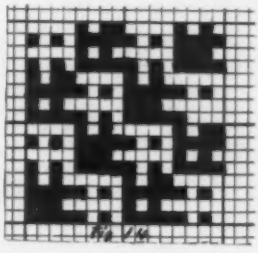


Fig 14

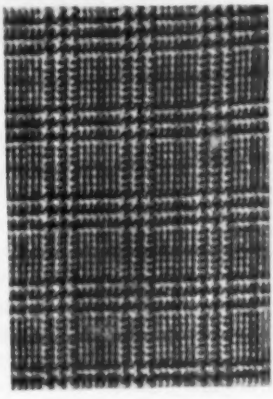


FIG. 8.

To produce style as Fig 5 in cloth No. 3 the order of coloring would then be,

2 dark, 2 light } 64 threads
2 light, 2 dark } 4 threads
2 dark, 2 light } 16 threads
2 light, 2 dark } 4 threads
2 dark, 2 light } 16 threads
2 light, 2 dark } 4 threads

Total, 108 threads in one repeat.

The order of wefting is exactly the same as the warping.

To produce style as Fig. 7 in cloth No. 3 with plan at Fig 12, the order of warping and wefting would be:

Warp:

4 dark, 8 light, 4 dark } 48 threads
4 light, 4 dark } 48 threads

Total, 96 threads in one repeat.

Weft:

4 dark, 8 light, 4 dark } 48 picks
4 dark, 4 light } 48 picks

Total, 96 picks in one repeat.

To produce style as Fig. 8 in cloth No. 3 with plan at Fig. 12, the order of warping and wefting would be:

Warp:

4 dark, 8 light, 4 dark } 48 threads
4 light, 4 dark } 24 threads
4 twist, 4 dark } 8 threads

4 light, 4 dark } 16 threads

Total, 96 threads in one repeat.

Weft:

8 dark, 8 light } 48 picks

4 dark, 4 light } 24 picks

4 dark, 4 twist } 8 picks

4 dark, 4 light } 16 picks

Total, 96 picks in one repeat.

The second plan is given at Fig. 14, and a cross section through the warp at Fig. 15 shows the weave structure and method of binding.

To produce style as Fig. 10 in cloth

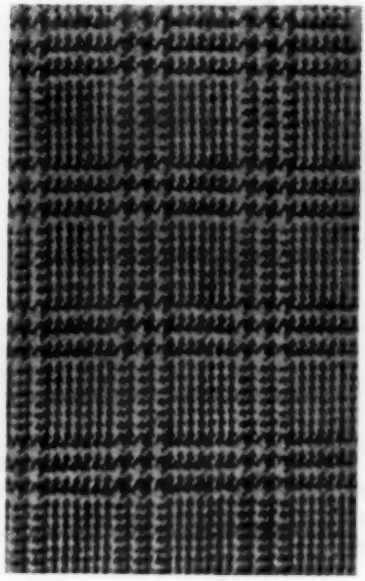


FIG. 10.

No. 3 and plan at Fig. 14, the warping and wefting would then be

Warp:

8 dark, 8 light } 48 threads

4 dark, 4 light } 48 threads

Total, 96 ends in one repeat.

Weft:

8 dark, 8 light } 48 picks

4 light, 4 dark } 48 picks

Total, 96 picks in one repeat.

To produce style as Fig. 11 in cloth No. 3 and plan at Fig. 14, the order of warping is the same as the last scheme while the order of inserting the weft is 8 threads dark, 8 threads light. The first end and pick of each design corresponds with the first end and pick of each warping and wefting scheme detailed above. The following shades are suggested for use with the foregoing double cloth designs and No. 3 make of cloth, and are classed as dark and light shades.

		Dark.	Light.
1	Warp & weft	smoke	slate
2	" " "	black	slate
3	" " "	dark brown	navy
4	" " "	dark brown	dark blue and lavender mix.
5	" " "	navy	drab or khaki
6	" " "	dark smoke	light smoke
7	Warp	dark reddish brown	slate inclined to lavender
	Weft	black.	slate inclined to lavender

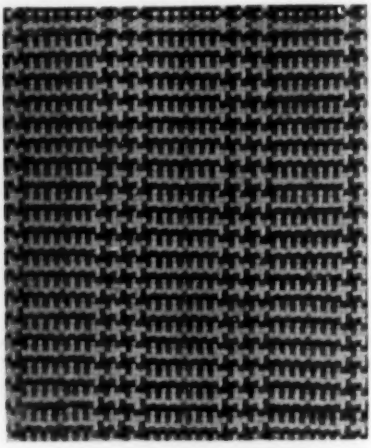


FIG. 11.

8	Warp	black	slate inclined to lavender
	Weft	dark green	drab or khaki
9	Warp	dark reddish brown	slate inclined to lavender
	Weft	dark green	drab or khaki

(To be continued.)

—A pale reddish spot results when goods washed with ammonia come into contact with copper or brass. Ammonia attacks those metals instantaneously, especially if it has not been thoroughly mixed with the soap lye. Cuprate of ammonia is formed, and forms spots which are very visible on light goods, and cannot be got rid of, for the only means of destroying them, viz., dilute sulphuric acid, acts energetically on the light dyes.

KNITTING DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

The increasing number of fancies offered is one of the most striking developments in the fall hosiery market. Stripes have crowded out plaids for the time being, but the indications are that checks will soon have another inning. Red, blue, purple and lilac are the most popular shades.

Importers are now in line, and while business is not all that could be wished, its early volume has reached a reasonable point. The Chemnitz market remains strong, although a few weak spots were noticeable last month. Many of the German manufacturers are still sold several months ahead.

No great changes are to be noted in the seamless and full fashioned trades. Makers of full fashioned goods, with a few exceptions, have enough work ahead to last until settled cold weather. Hardly as reassuring is the state of prices; still, there is no reason why their level should not be maintained. Seamless business has begun on spring account, ordering having been rather free at the slight premiums asked over last season's prices.

Producers of mercerized hosiery are learning their lesson, although rather painfully. Their fancies show especial improvement, while the whole line is not without betterment. Combination is still seriously talked of, but with little hope of realization.

Underwear importers, as might be expected at this transition period, are doing little except delivering fall orders. Spring business has begun in domestic underwear. Here, as in hosiery, there is marked leaning toward fancies. Even greens are extensively shown among a host of colors in balbriggans. The more pronounced of these goods, however, will have only short lived popularity. The medium and finer grades of balbriggans offered are many of them excellent bargains, for their improved finish is rapidly lessening the lead of the imported article.

Open-work designs are in liberal request, which call naturally follows the craze for lace work. The plain mesh has done so well that the fancy mesh has developed from it.

The fancy fever has gone so far as to bring all sorts of novelties in golf jackets and sweaters in color combinations. Fine worsteds in light weights appear to be growing in popularity daily.

More mercerized goods are being displayed than ever before, but its progress is slow and not without reason, in view of the lack of lustre, particularly on cheaper grades.
ticularly on cheaper grades. Unless mercerized goods show by their lustre what they are, it is foolish to make them. Manufacturers make a great mistake in economizing in price on yarns, at the expense of lustre.

Woolen goods, generally speaking, seem to be prospering. Flat goods and wool fleeced underwear manufacturers have unquestionably been helped by the easiness of the wool market. The finer wool fleeces seem to have benefited most. The duplicate order business on heavy weights appears to be relatively slow.

Cotton goods are decidedly steady, owing to the confidence of spinners in higher prices before winter really sets in. Consequently they are offering only short time quotations.

Loopers or Turning-Off Machines.

The manner of sewing knitted ribs or anklets to the legs of canton flannel drawers illustrates how they were formerly attached to knit drawers in the infancy of the industry. From the crude way of sewing on the ribs to stockings, drawer legs, shirt sleeves and sewing up the shoulders has come the improved looper or turning-off machine, with its predetermined number of points corresponding to the number of needles or gauge of the knitting machine. It may be a "single stitch," an "under and over," "through and through" or "double stitch," or a single or double thread machine; on one style of machine the needle works from the inside or butt end of the points, and on other styles of this type of machines the needle works from the outer end of the points.

Turning-off machines were first imported from England, and when they were first built in this country (Cohoes, probably), considerable trouble was experienced and it was not until after a visit to England that the proper trick of cutting the cylinder was "tumbled to," after which the Yankee-built machine was all right and rapidly came into use.

To the uninitiated, looking at a girl sitting on a low seat, putting the toes of a stocking or the parts of the fabric to be looped on the points of the disc of the machine, stitch by stitch, one loop on each point, it may seem easy, but it is soon apparent that quick and strong sight and active and nimble fingers are required, and that the machine is capable of running much faster than the most expert operator can place the stitches on the points in the proper manner to obtain perfect work. The looper, though it is, for obvious reasons, the slowest running machine used for finishing knit goods, performs the neatest work, its mission being to join the edges of the goods together at certain places in the garment in the smoothest, neatest manner possible, and that is by a peculiar process of sewing the two parts together, loop for loop and stitch for stitch, joining them so perfectly that most people who wear them think they are "knit that way," not having the knowledge that the cloth comprising the garment is knit on a circular machine making a wale on one side only, and the firm and very elastic rib, on a rib machine, the latter having two straight rows of needles, knitting both sides alike and consequently a much slower process. While the looper or turning-off machine is one where the operator works constantly, it is also working constantly itself, if speeded to the operator's gait. Many various processes have been exploited to take the place of looping machines, but none have anywhere near equaled the quality of work, though some grades of work are done satisfactorily with the so-called "Pin Wheel" machine.

The up-to-date turning-off machine has a sewing mechanism operating in connection with a large disc which carries on its periphery a row of projecting pins or points, and is supported by a shaft connected with an overhanging arm fastened to a stand which is bolted to the table. By overhanging, the work is permitted to hang down and even rest on the floor if necessary, giving the work hanging on the points plenty of room to revolve clear of the table to which the frame of the machine is bolted.

The two pieces to be sewed together or looped are fastened to this disc so that one of the points shall pass through each of a course of loops near the raw edges of the fabrics, which lie one upon the other. The rotation of the cylinder carrying the points, brings the loops in succession under the sewing needle which operates between the points, joining the two fabrics together in a manner not noticeable to the casual observer, so perfectly is it done.

In order that the machine may operate successfully and perfectly, it is necessary to trim the raw edges down to the loops that are impaled upon the

points, and unless this is done and all the raveled threads or loose waste be removed before passing under the needle, the seam will be made with an unsightly welt. Formerly, the surplus edges were sheared and the loose waste was brushed and picked out by hand. Later, several kinds of automatic shearers and trimmers have been introduced into the mechanism, some of which embrace devices for brushing out the selvage when cut away. An article on looper trimmers will appear in a later number.

The looper should be bolted to a firm, strong table with a top 1½ to 2 in. thick and 2½ ft. high, by means of the three bolts provided, so that the front part of the stand of the looper is even with the edge of the table, the disc extending out from the table. Where no power is available, the machine may be operated by hand.

The machine should be run at such a speed that the operator is kept constantly busy placing the stitches on the points and removing them after they are looped, which may be from 300 to 400 turns per minute. If the machine skips stitches, examine the needle. If broken or damaged beyond repair, replace with a new one; if only worn dull, rub with an oil stone on the top and sides of the point—never on the bottom. See that the point of the needle enters the eye of the points exactly in the centre. Skipping is often due to the hook not being adjusted so as to rub the needle slightly when passing over it, or when picking up the thread. The needle may move too quickly or too slowly and thus be out of time with the hook. When set properly, the point of the needle when entering the loop on the hook should be one-sixteenth of an inch from the hook and just clear the heel of the looper. The hook after passing away from the needle will again move forward and pass under the needle, just touching it. The hook will be about one-eighth of an inch from the point brass when it is at its lowest drop.

It is very essential to have the hook perfectly smooth and such a shape as to keep the loop of the thread from dropping off, and also to allow it to slip off easily before the needle enters the new loop. Keep the thread taut during the time the needle is passing through the loop. Have the thread rather too fine than too coarse for the needle. In order to replace a point, remove the brass section that covers the base of the point and give a strong, quick jerk upward, thereby removing the old point and preparing the groove for the new. Place the new point in the groove properly, and with a small, blunt, chisel-like tool give a few slight taps with a hammer on the upper side of the point, then with the flat end of the hammer gently tap the brass over the point in order to level it; replace the brass section, and the machine is again ready for business.

The sewing mechanism must be timed with the points on the large disc; when properly adjusted the needle will cover the middle point in the opening between the points of the chain plate. If such is not the case, slightly loose the set screws in the main arm of the machine and move the disc until the needle does cover the middle point and tighten the set screws. The amount of work taken off these machines depends largely on the skill and will of the operator. It is claimed that 40 dozen pairs of seamless hose in ten hours is a common thing.

MET.

Calculating Weight of Knit Fabric from Small Sample.

We will assume, says Franz Reh in his work entitled La Fabrication de la Bonneterie, that the knit fabric is made 55 inches in width, or circumference in the piece, and that the sample before us measures 4 inches square, and weighs 11 grains.

First unravel one row of stitches and measure the thread pulled out, which is, say 10 inches long. This indicates that for every 4 inches in width one row of stitches requires 10 inches

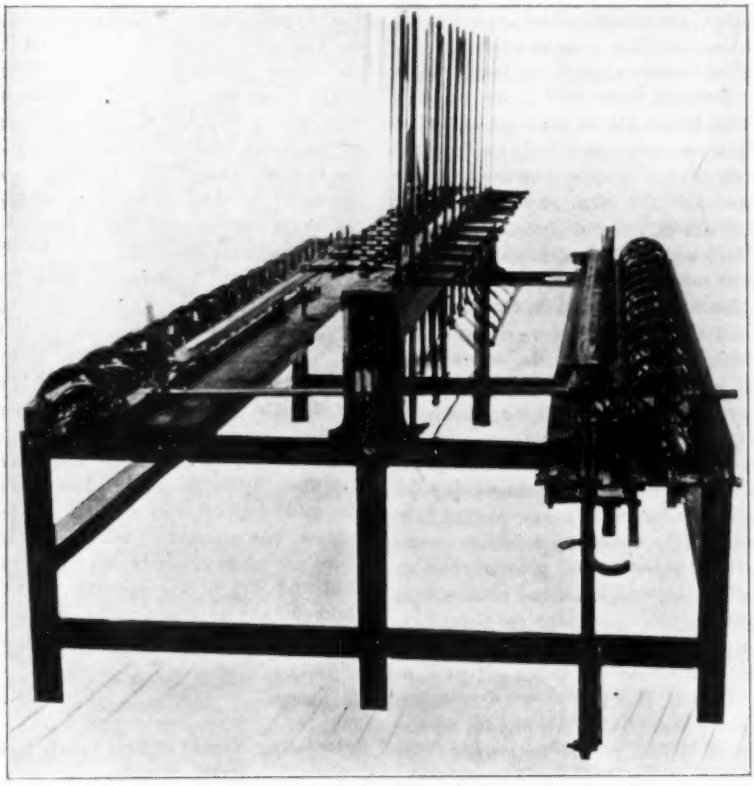
of yarn, and by the same proportion one row of stitches 55 inches long, or the width of the fabric, would require 137½ inches of yarn. We find there are 50 rows of stitches in the four-inch sample, or at the rate of 450 rows per running yard. As each row requires 137½ inches of yarn, the 450 rows, or one yard of the fabric would require 61,875 inches, or 1718 yards of yarn.

The small sample 4 inches square contained 50 rows of stitches, each row having 10 inches of yarn; the 4-inch sample has, therefore, 13 9/10 yards of yarn, weighing 11 grains. To calculate what 1 pound of yarn would weigh, at this rate, we multiply 13 9/10 by 7000, the grains in a pound, and divide the product by 11, which gives 8845 as the number of yards per pound, or No. 10½ yarn cotton standard.

To estimate size of the yarn as it was knit in the goods, allowance must be made for the loss of weight in finishing, which would make the yarn lighter in the goods, and also for the fulling that the goods may have received, which would make the yarn in the goods heavier than when being knit.

Germantown Skein Winder.

This machine shown in the illustration is claimed to be giving satisfaction wherever it has been used, and it is in operation on cotton, woolen and worsted yarn in some of the largest mills in the country.



GERMANTOWN SKEIN WINDER.

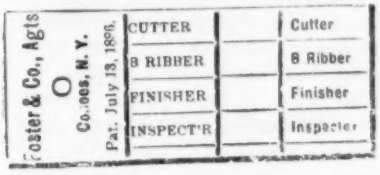
It is made either double or single. The bottom runners can be easily adjusted according to the yarn used. The machine is 12 feet long, and one operator runs twenty-four ends. It is manufactured at the Germantown Hosiery Machine Works, 5122 Wakefield St., Germantown, Pa. The pro-

prietor, Geo. W. Lindley, has recently made some improvements to this winder, and the works are very busy at present on orders for this machine. Among the mills using it are the following: West Bros., Plymouth, Pa.; Chas. Chipman's Sons, Black Diamond Knitting Mills, Evans & Stonely, Woodcock Bros., and Why Brothers.

Piece Work Tags.

Many manufacturers are confronted every day with a serious problem in regard to keeping track of work in their finishing rooms. The old system of brass checks is a "back number" and has been discarded for some time by the majority of the mills in the country.

There is a system in very general use today in the mills of the country and Canada, which is without doubt the best ever used in the finishing rooms. It is the Stetson coupon tag system. The tags are printed and arranged to suit the requirements of any finishing room. Each mill has a different arrangement of operations on their tags to suit the style and finish of their particular goods. The colors in which they are printed de-



note the price paid for the work. The system is in use in over two hundred mills in the United States and Canada, and the fact that it is in such general use is sufficient guarantee that they are just what is needed in a finishing room.

There is in connection with the check a book which has the name of the mill printed on it and also a space to place the name of the operator. There are fifty leaves in each book and room for 100 coupons on a page. The tag with all the coupons intact is placed on a dozen of goods; as each operator does her work, she cuts off her coupon, the back of which is covered with mucilage, and attaches it to her book. Each operator in turn does likewise until the dozen is finished, when all of the coupons will have become detached. At the end of the week or month, as the case may be, these leaves which have been filled with coupons are torn from the book by the bookkeeper, and the operator is paid for just the number of coupons which she has turned in on the leaves.

This system is patented and samples may be secured and further information obtained by writing to E. H. Foster & Company, 35-37 Factory Street, Cohoes, N. Y.

Knitting Machinery Exhibits at the Paris Exhibition.

Specially Reported for the Textile World by J. Henry Quilter.

(Continued from August.)

The main object of the improvements effected by G. Hilscher in his new machine, by which the sinker has nothing to do with the keeping movements, has been to reduce the movement of sinkers, and this has been accomplished as the sinkers now make but one movement per course instead of two as on the ordinary principle, thus gaining time and increased speed, while by the moving knocking-over harder yarns can be used, and weights when knitting can be dispensed with.

A special rotary cotton system is also exhibited by the same firm, having a special arrangement of carriers, so that fancy work can be made and a special fabric in imitation of jacquard work, this being known as "Zick Zack." Seaming, winding and other machines make an interesting exhibit under the personal charge of G. Hilscher, Jr.

Messrs. Claes & Fleutze of Muhlhausen, have adjoining above their exhibit of flat knitting machines, etc., which includes 7 and 8-needle machines for making plain hose and

half-hose, and others for ribbed goods such as leggings, gaiters, etc. Machines also with jacquard for making fabric in special designs suitable for hunting jackets, ladies' petticoats, children's fancy gowns, etc., also a special power driven auto jacquard fancy pattern knitting machine 12 needles per inch, 32 inch wide with automatic take-up motion, patent stop motion, electric stop motion for the breaking of threads, latch openers, etc. A four at once machine with various gauge and sized machines each with separate auto arrangement for welts, plain or rib stitch, driving, change of cams, stop motion, rack motion and each independent. These and sewing machines and a circular machine for making fabric for incandescent gas mantles complete this exhibit.

Messrs. Seyfert & Donner, Chemnitz, are exhibiting their various flat knitting machines, and the most important machine of this class is to be found here, viz., a machine, the "Teutonia," which is now being exhibited for the first time. It is an 8 at once machine, to make seamless "fashioned" hose or half-hose entirely automatic, fashioning the leg, the heel, the instep and to narrow the toe, there being no linking or seaming required; the machine has electric stopping tackle, to stop the machine in case of irregularities in yarn or other causes, that may break the yarn. Circular knitting machines innumeral have been introduced to make seamless hose and half-hose, but none have as yet succeeded in making a fashioned article. This machine, though a flat machine, has succeeded in this after taking some 2 years' experimenting and as such is the machine of today. In making half-hose the rib tops are transferred to the machine by a special transferrer; and the leg is made circular to the heel and then the heel is made on the pouch or American heel principle; the foot is fashioned at the gusset and the top is the Scotch toe fashioned each side, and narrowed to one needle, thus finishing off same without the need of joining. In making hose the leg can be made in two ways first by fashioning at the side of the stocking, or by fashioning at the back in the ordinary style of wrought fashioned goods; in this case the leg is made at one operation, and the heel, foot and toe at a second operation. All sizes can be made on one machine, and the machine exhibited runs at two speeds, changes being automatic, viz: 100 movements or 50 courses per minute on plain circular fabrics and 30 courses on fashioning.

This same firm also exhibits a patent narrowing machine for fashioned ribbed hose legs, an automatic jacquard power machine for fancy goods, such as waistcoats, etc., an unlimited number of designs being made on the same machine, regulated simply by the changing of sheds on a designing chain.

An automatic ribbed top machine making flat tops, with welt, slack course, dividing threads, stopping tackle, etc.; with these special machines are also a few hand machines the specialties of this well known firm.

Messrs. Terrot of Cannstatt, also are exhibiting several of their well known circular loop wheel frames on the French system, the most interesting of these being a special machine with a new patent vertical stripe mechanism for making special cloths in numerous designs. The special changing of threads by means of sinkers for plated designs is also shown, and an interesting machine is the machine making the new twist fabric. They also exhibit machines with special striping, tucking and other specialties. The "Fancy Web" machine for making openwork in quite a variety of designs must not pass without notice, nor must the rib machine for making double welts and pearl ribbed cloths.

The only other exhibit of knitting machinery is in the Swiss section where Messrs. Dubied & Co., of

Couvet, are showing a variety of their build of flat knitting machines.

In the English section, the Millar Loom, part knitting and part weaving is exhibited by Messrs. Blackburn & Co., of Nottingham, England, which completes the machines of most interest to hosiery manufacturers, but other exhibits of allied machinery are particularly interesting, to say nothing of the exhibition itself which requires months, not days, if you are to thoroughly appreciate its greatness, and to study the various exhibits, some 50,000 in number.

Patent for Fashioning Tubular Knit Fabrics.

The goods are shaped by the introduction of additional loops, which, it is claimed, do not produce holes or ribs in the fabric.

The formation of the regular rounds of loops is as in the ordinary knitting (see Figs. 2 and 3), where the thread

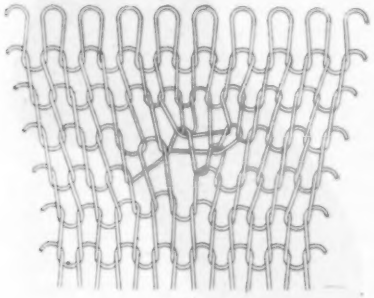
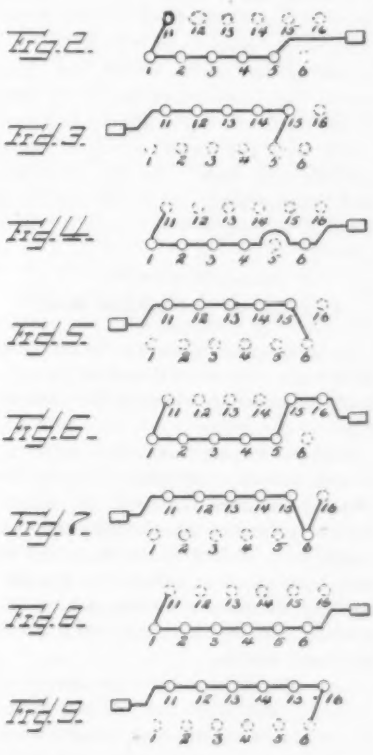


Fig. 1

is fed to needles 1, 2, 3, 4, and 5 of the front bank of needles and 15, 14, 13, 12, and 11 of the rear bank of needles. When widening the fabric, one additional loop is formed on needle No. 6 and the preceding loop on needle No. 5 is omitted, the thread passing directly from the loop No. 4 to loop No. 6. (See Fig. 4.) This step produces a sort of a brace between the additional loop and the loop from which the thread proceeded to this additional loop.

In the next step the thread goes across to the rear course and connects with the rear loops without forming any additional loop on the rear course. (See Fig. 5.) This gives a bridge from the additional loop of the front course to the rear course. In the next round in the front course all the loops except the additional loop are cast, and then two loops in the rear course are formed—to wit, the loop preceding the additional loop and the additional loop of the rear course (see Fig. 6)—upon needles 15 and 16. In this way the additional loop upon the rear course is braced or bridged with the loop preceding it and with the front course—that is to say, it is pulled toward the front course. Both of these threads, the thread leading to the additional loop in the front course and the thread leading to the loop preceding the ad-



ditional loop, and the additional loop on the rear course being straight, threads will have a tendency to contract and draw the additional loops of

opposite courses toward each other and toward the front course. The loop which was omitted in the first round in the second round is also formed. This will have a tendency to borrow from the opposite course, and thus draw the two courses together.

After the formation of the additional stitch of the rear course of this round, the additional loop of the front course and all of the other loops of the rear course are cast. (See Fig. 7.) As a consequence this makes the thread again cross from the front to the rear course and has a tendency to further draw or close up the orifice, or, what is the same thing, draw the two rows together. The regular knitting then proceeds with the additional loop on each course. (See Figs. 8 and 9.)

The thread crosses twice with an omitted loop in the front course, which enables the other loops to be drawn together to close up the orifice. In other words, the additional wales at this point, front and back, are formed partially from the thread going to make the opposite wale. In this way the two wales, front and back, are to a certain extent drawn toward each other.

Lace Effects in Seamless Hose.

Great interest is shown by knitters in the lace effects in seamless hosiery, made by Henry Brown's patent attachment to the ordinary seamless knitter.

This is a very attractive novelty, but unlike many novelties has the desirable qualities that will no doubt give it a permanent place among the staple lines of hosiery, as the effect is neat and the goods possess the fine finish that is always in demand, while the cost is very little more than plain seamless hosiery.

Lace effects promise to become very popular, and will, like all novelties, reward the active and enterprising manufacturer who adopts the new style early in its career. We understand that while one grade of plain half hose sells for $1.12½ per dozen, the same grade with lace effect sells for $1.85 per dozen.

Mr. Henry Brown of The Brown-Aberle Co., of which he is manager, is one of the pioneers in seamless hosiery. His skill and thorough practical knowledge of knitting have helped very materially the progress of this industry to its present rank.

LACE EFFECT MADE ON THE BROWN ATTACHMENT TO SEAMLESS KNITTING MACHINES.

Paxton & O'Neill, 129 Bread Street, Philadelphia, who have the exclusive right to apply this invention, inform us the results have been a gratifying surprise to those who have gone into the manufacture of lace effects by this system.

SILK DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

What Silk Fabrics Should be Woven on Hand Looms.

LUDWIG BRAUN.

At first sight, one would think, considering the enormous strides made in the construction of machinery, that it would be possible to weave all kinds of silk fabrics on power looms. In theory that is perfectly correct, but in practice it is not so, as even in these days there is a certain number even of plain fabrics which can be more advantageously made by hand looms than by power looms. To this class belong in the first place all fabrics which have a great number of warp ends per inch and a proportionately small number of threads in the weft. In weaving these goods, a very small portion of the time is consumed by the weaving itself, but most of the time is occupied in keeping the warp in a good state. The hand weaver can execute these manipulations more exactly and more quickly than it is possible to do on a power loom. A heavy all-silk fabric made by hand has a softer and more delicate handle than goods made by power looms. An expert will easily distinguish the difference in the two manufactures.

Unfortunately for the hand loom weaver, these heavy fabrics are much less worn than formerly, because even rich people prefer the cheaper power loom fabrics to the more expensive ones, on account of the continual change of fashion, rendering good silks useless or unwearable before they are worn out. Entering into particulars, we have to mention in the first place Turquoise, half and all silk tie-stuffs, which are just now in great demand. These coarse-grained fabrics with only 25-28 picks per inch are produced still today without exception on hand looms, both in single width, i. e. 24 inches, and in double width, i. e. 2 by 24 inches side by side.

The principal reason why they cannot obtain a good fabric in Turquoise on power looms is that there are only a few picks per inch, and a very thin weft. No. 120/2 fold or 140/2 fold cotton yarn is generally used, which is shot in double or triple, in order to produce the greatest possible perfection in the ribbing. It is certain that there can be only a very soft beating; even the hand weaver is sometimes obliged to keep back the lathe. There are Turquoise fabrics with only 22-23 picks per inch, and they can count the single picks without a magnifying glass. Till now, they have not succeeded in building a mechanism for power looms to produce an even fabric with these cloths loosely woven.

In beating-up, the hand weaver perceives immediately if a coarser or finer thread of weft arrives, and he can regulate the lathe, a thing that is impossible with a power loom. The fine weft offers too little resistance in order to make a correct beating possible.

There is another kind of fabric, for instance, Sicilienne, which has also only 35 picks per inch, but the coarse weft (for instance, No. 50/5 fold cotton) offers a sufficient resistance for producing a more even cloth. There is also the Moire Velour fabric, (known as a silk cloth, not a velvet), which contains only 36-37 picks per inch, and is woven with the coarse weft. A second sort of fabrics, the manufacturing of which is better effected by the hand loom than by power looms, is a "Travers" effect, especially such sorts in which the stripe is built only by the effect picks without a ground pick. In these fabrics, which have generally a satin ground, there is a great difference

between weaving the ground work and the effect stripe. In weaving satin, only one shaft is lifted, while in weaving the effect stripe all shafts are lifted except one or two. That may easily account for bad running of power looms; a safe working is nearly impossible. For this purpose, open shed double-lift dobbies are used with up-and-down motion. In using these dobbies, the shafts are to be lifted only half-way as high as in the common dobbies. There is no doubt that double lift dobbies produce a much safer run of the loom.

Another kind of fabrics, little adapted for weaving on power looms, is gauze cloth. In these fabrics, the weaver has more work in operating the doup-mails than in setting in a new quill. As power looms run much quicker than hand looms, the breaking of turning thread is not to be seen immediately by the weaver, and therefore it happens that the corresponding warp ends also break. This inconvenience appears not only in gauze fabrics, but in all goods for which doup-mails are to be used. For instance, it would not be practical to produce scarfs (a kind of tie-stuffs) on power looms, because four or five of these ties are woven side by side and are united with turning threads. On power looms a manufacturer will hardly succeed in getting good edges, because the breaking of one turning thread is sufficient to loosen the edge threads from the fabric, which come in the space allowed for cutting. It cannot fail to happen that in cutting through the single parts of the fabric these threads are spoiled.

Generally speaking, all fabrics with four or five different ground bindings are not well suited for weaving on power looms, especially if dobbies must be used. For instance, there are sometimes united in stripe designs, satin, grain, armure and cannele in one fabric. Every ground must be put on a special beam; thus we have five different beams including the edge beam. How can a place for these five beams be found on a power loom? The preparing of such a tissue would require a great deal of time. Keeping the warp in a good state is the main part of the weaver's work.

In colored goods another difficulty is added: the number of yards ordered in one color is often so small that putting these small orders on power looms could only be effected with a great loss of time and money. A warp under a length of 100 yards is in every case much better put on a hand loom.

There are, moreover, other articles, now in a great demand, for which only hand looms are to be taken into consideration. To this class belong Chine, —that is to say, genuine Chine,—the warp of which is printed before weaving. As is known, the warp of these goods must be cleaned before printing. The warp is beamed in the usual manner, pieced and then cleaned. After that the warp is cut again and printed. Then is the warp ready for weaving. As the ground of Chines is mostly taffet, it is well known that the breaking of only one warp end would spoil the entire design, and give an unsalable cloth.

Although hand loom weaving is undoubtedly on the decline, yet even the power loom is not as yet accepted as being the best machine for the production of some of the higher classes of goods. In many countries, however, such as India, Japan and China, where labor is cheap, the use of the power loom does not make very rapid headway, and hand loom weaving in some of the poorer parts of several countries is far from being dead, not to speak of its adoption in many philanthropic and other institutions, some of the inmates of which are constantly engaged as hand loom weavers making goods for the use of the institution.

The hand loom in its old form required a fair amount of skill on the part of the weaver to manipulate it properly, as each motion had to be worked separately. Recognizing that this was quite unnecessary, someone has now built a hand loom in which the various motions are so coupled to-

gether that on working the lay backwards and forwards by means of a hand-rail, all the motions, such as shedding, picking of the shuttle, beating-up of the weft, and the take-up of the cloth, are brought into operation in correct relationship to each other, as in the power loom. Owing to the simplicity of the mode of working, a person of ordinary ability would learn to manipulate it in a very short time. The loom is adapted for making either light or heavy goods, plain or twill.

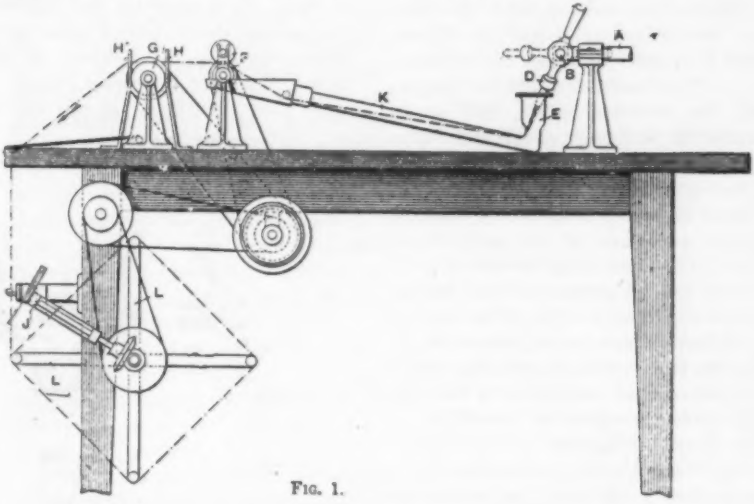


FIG. 1.

Spinning Artificial Fibres.

The latest form of spinning appliance for artificial fibres has been patented by a Swedish engineer, who uses one of the well-known solutions for his purpose. This mixture is spun or converted into thread by an apparatus as shown in Fig. 1, which is a complete side elevation. The more important parts are shown in plan in Fig. 2. An enlarged side view of the nozzles and their fittings is given in Fig. 3, the same being shown in front view in Fig. 4, which gives one of the nozzles partially in section, so as to show the course of the solution through the apparatus.

The tube A is supplied with the liquid to be converted into strands of artificial silk. This tube connects with a transverse pipe constituting two hollow cones B, set horizontally and in line with each other. Each cone is closed at its outer end, and its central passage terminates in a lateral opening C through which it is intended to discharge the solution. These cones constitute fixed plugs, upon which are mounted nozzle-holders D furnished with handles for working the same into the desired position on the plugs, with which these nozzle-holders form taps. Each nozzle-holder, when depressed, is in communication with its conical plug, and the tap is open; when raised, communication with the plug is cut off and the tap closed. The nozzles carry at their extremity a glass die, pierced with fine holes, through which the solution under pressure is discharged in the form of fine strands or fibres. The nozzle-holders—best shown in the front view, Fig. 4—are so constructed that they will stand at an oblique position to the axis of the cone plugs to which they are fitted, in order that the dies may approach each other and discharge streams of fibre into a glass vessel placed to receive them. This vessel, marked E, is carried by or formed in one with a conducting tube K which

inclines slightly upwards towards its free end, and is open for the discharge of the strands. The vessel and its conducting tube are charged with a liquid suitable for the extracting of the solvent from the material used for producing the strands or fibres, and during the passage of the threads through the tube K the main part of the solvent is extracted and the viscous mass of fibres is converted from a plastic to an almost solid state, in which it is easily handled.

The strands, as they leave the tube, are drawn out by a pair of nipping rolls F in order to reduce the diameter of the combining strands, to squeeze out the adherent liquid, and to increase the brilliancy of the fibre. The thread is then led on to a cylindrical roller G mounted between two fixed guides H, which respectively lead the thread on to and off the periphery of the roller. This roller serves as a rotating bed for supporting the thread, while imparting a slight twist thereto, sufficient to prevent the fibres composing the thread from separating during the subsequent operations of denitration or hardening of the thread, spooling, final twisting, etc.

The thread thus far constituted is then drawn off from the apparatus and received on a removable rotating reel L, mounted on the framework of the table which supports the apparatus, the rotations of which reel are registered by suitable counting apparatus J. It may be here remarked that attempts have previously been made to subject strands or fibres to friction by passing them through tubes or over revolving cones, but with a result said not to be compared with that described.

By reference to the plan view, Fig. 2, it will be seen that the artificial textile fibres or strands are carried over a cylindrical surface rotating in a plane parallel to the direction in which the strands are drawn out. The friction roller used serves for the purpose of carrying and stretching the strands, as well as for agglomerating the different fibres by friction twisting.

In starting the machine, the thread is drawn straight from the guide H, as shown by the dotted line M, and when the spinning has been fairly started it is placed in the guide H. The effect is that the thread, while entering upon the roller in a direction parallel to its own rotation, is drawn off at a slight angle, thereby receiving a gradual false twist which serves for the combining of the separate strands or fibres. It is desirable that the friction surface should have a speed of rotation equal to the delivery of the thread from the squeezing rollers, in order that the thread should not be

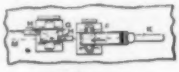


Fig. 2.

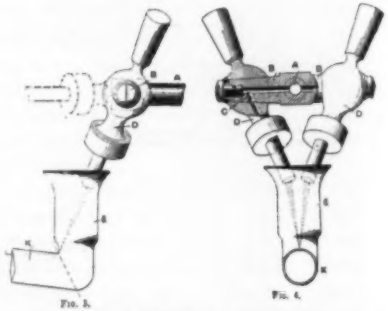


Fig. 3. Fig. 4.

unduly stretched after it has passed from a plastic into a solid state.

Great headway has also recently been made in preparing the different solutions from which artificial threads are made, especially those on a cellulose basis. A recent mixture which has been patented by a Mulhouse firm consists of taking clean cotton, cellulose, hydrocellulose, oxycellulose, or hydrated cellulose, and treating it at a low temperature and in a state of very minute sub-division for half an hour or longer with a solution of caustic soda, containing about 16 per cent. of NaOH. For one molecular proportion of cellulose calculated as $C_6H_{10}O_5$, or the corresponding quantities of the other derivatives, two molecular proportions of NaOH are required. The

mixture is thoroughly mixed in the cold with an amount of a finely powdered cupric salt; for instance, copper sulphate, $CuSO_4$, $5H_2O$, corresponding with the quantity of caustic soda—viz., one molecular proportion of $CuSO_4$, $5H_2O$ for two molecular proportions of NaOH. The paste thus obtained is easily soluble in concentrated aqueous ammonia, yielding a blue viscid liquid suitable for spinning purposes, and containing from 7 to 8 per cent. of dissolved cellulose.

The textile manufacturer says that the difficulty of preparing concentrated and stable solutions of cellulose in ammoniacal copper oxide suitable for the manufacture of thread is overcome by a Mulhausen chemist by submitting the cellulose or cellulose derivative to the following process before dissolving it:—The fat-free material is first treated with a weak bleaching liquor—for preference electrolytical bleaching liquor in the proportion of one part of cellulose to from 20 to 30 parts of bleaching liquor—for a few hours, and then with a concentrated solution of caustic alkali (about 25 per cent.) at a low temperature for about half an hour.

After thorough washing and draining by centrifugal action the material thus treated is dissolved in ammoniacal copper-oxide solution, the best proportion of copper and the material being that between one molecular weight of the cellulose (calculated for $C_6H_{10}O_5$) or cellulose derivative and one atomic weight of copper. Instead of treating the material first with the bleaching liquor and then with the caustic alkali solution, the order of these operations may be reversed, in which case thorough washing must follow the alkali treatment before the bleaching liquor is applied. Solutions prepared in this way are said to be very convenient for spinning purposes, and to yield threads possessed of great strength, elasticity, and brilliancy.

American Silks at Paris.

The silk jury at the Paris exposition have awarded the Grand Prize of Honor to two American manufacturers, and, as shown in the list which follows, the merits of American silks have been recognized by the award of gold, silver and bronze medals and honorable mention to many other American firms.

These awards indicate both the excellence of American silk goods, and the impartiality of the jury of 28 members, 15 of whom were French.

The awards are as follows:

Grand prize of honor, the highest award given to any exhibitor, Richardson Silk Co., of New York, Chicago, and Belding, Michigan, sewing silk, embroidery silk and button hole twist.

Gold medal, Empire Silk Co., New York and Paterson, N. J., novelties in scarfs, tie silks; Liberty Silk Co., New York City, warp print display, dress silks; John N. Stearns & Co., New York and Elmira, N. Y., weave and finish of black silks; Johnson, Cowdin & Co., New York, Paterson, N. J., and Phoenixville, Pa., silk and faconne ribbons.

Silver medal, Pelgram & Meyer, New York, Paterson and Boonton, N. J., Harrisburg, Pa., dress silks and ribbons.

Bronze medal, Doherty & Wadsworth, New York and Paterson, N. J., jacquard, broche, crepe de chine, gauzes, etc.; Paterson Ribbon Co., New York and Paterson, N. J., fancies and plain ribbons; Smith & Kaufmann, New York, fancies and plain ribbons; Cardinal & Becker, Paterson, N. J., silk doublures and mixed goods.

Honorable mention, Stern, Pohly & Herman, New York and Paterson, N. J., dress silk and fancies; Bridgeport Silk Co., New York and Bridgeport, Ct., dress silks and fancies.

POWER DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

ELECTRICITY—STEAM—WATER.

Some Notes on Power Transmission.

Belting, wire rope, manila rope, each has its sphere in which its merits are acknowledged. There are many principles which apply equally well to all three, and there are requirements peculiar to each system.

For very long distances, such as are found in railway transportation and heavy hoisting, nothing has been found equal to the wire rope, but on account of its great weight, large pulleys required, rapid wear, and friction, it is found undesirable in ordinary mill work.

For short distances, high speed on small pulleys, or where tight and loose pulleys are used, the leather belt is unequalled.

Belting is, however, expensive, and this is particularly so where large amounts of power necessitate very wide belts. Belts should he run as loose as possible. If too tight, the result will be hot bearings, excessive wear and tear, and loss of power by increased friction. The strain on a slow moving belt is greater than if the belt was moving faster when doing the same work, consequently pulleys should be as large as conditions will admit. On a small pulley the strain is greater, and yet the arc of contact is less; so by increasing the size of the pulley we relieve the belt in two ways, relieving the strain and giving more surface to cling to.

Belts are noisy and generate electricity, which gives so much trouble in textile mills. The slack side of a belt should always be uppermost; this gives a greater arc of contact. More power can be transmitted by a belt having the grain side next to the pulley. Belts should never be run vertically as the weight in such cases has a tendency to keep the belt away from the lower pulley.

When it comes to transmitting a large amount of power for a long distance, say 75 feet or more, the manila rope has decided merits. Experiments at the Watertown Arsenal indicate the tensile strength of manila fibre to be 30,000 pounds to the square inch, or more than one-half that of wrought iron. This strength, however, is shown only when the strain is in a longitudinal direction; transversely the fibre is very weak. It is for this reason that large pulleys are necessary for transmitting power with manila rope. The pulley diameter should be as large as possible, not less than 30, and preferably 40 times the diameter of the rope. Great care must be taken to put such proportion of twist in the yarns and strands as will render it least liable to crosswise strains and frictional wear and tear.

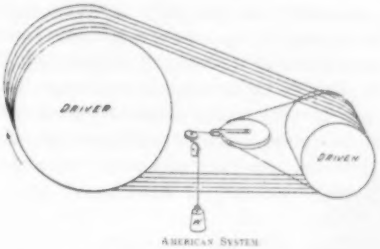
In a rope drive, next in importance to the rope itself, are the pulleys or sheaves. While these pulleys, if made of metal, are much heavier than pulleys of equal diameter used for belting, this extra weight is an advantage by reason of its acting as a balance weight, and producing a more uniform speed. This fact accounts for the more uniform running of rope drives.

To avoid excessive wear, and prevent injury by steam, gases, or moisture, the rope should be treated with a preparation. Ropes do not generate electricity and they run noiselessly.

The form of the groove in the pulleys is of great importance, and experience so far shows that a groove

having an angle of about 45 degrees is the best.

There are two general systems of rope driving, known as the English or multiple system, where a number of independent ropes run side by side, and the American or continuous system, where one rope is wound around the sheaves several times. In the latter system it is necessary to conduct



AMERICAN SYSTEM.

the rope from the delivering to the receiving groove, also to take up the slack, and maintain the desired tension. This continuous system is shown in the illustration.

It is claimed for the English system that it possesses the utmost security against break-downs, because of the extreme unlikelihood of more than one rope ever giving away at one time, thus enabling repairs to be made when most convenient; also that power from one pulley may be more easily subdivided and transferred to other pulleys.

Against this system, it is claimed that, owing to unequal stretching, together with the difficulty of obtaining ropes of the same diameter, and of making them the same length, all are under a different velocity and tension, causing slipping, wear, and loss of power; it is also said that a lot of ropes is very unsightly when each one is sagging differently from all the rest.

For the American or continuous system it is claimed that by the use of the tightener pulley the rope throughout is subjected to the same tension, and that only one splicing is necessary. For vertical drives, where belts are so objectionable, the continuous system rope drive is found very satisfactory.

Artificial Lighting of Mills.

The processes of textile manufacturing are so varied, and conducted under such widely varying conditions, that no one means of lighting mills can be considered best for the industry in general. Each mill must judge from its location, size and local conditions what is best suited to its requirements.

There is the question of quality. The work in many departments requires careful examination by the operative, and under such conditions the best light is the cheapest, although it may cost more money. For such work the electric light is unequaled and the recent progress made in the better diffusion of light from both arc and incandescent lamps, puts it far in the lead where the work requires a clear, strong light. In such cases the question resolves itself to this: What is the best and cheapest electric light?

If the selection of such a light involves any increase of cost, compared with other systems of lighting, this added expense sinks into insignificance when compared with the saving effected by securing a larger production, better work and consequent reduction in the quantity of seconds and "off" goods which must be sold at a largely reduced price.

A few years ago statistics of the comparative cost of lighting cotton mills by oil, gas, and electricity, were given at the N. E. cotton manufacturers' meeting. The cost per spindle per year of 400 hours was given as follows: Oil, 1⅛ cents per spindle; dollar gas, 4 7/10 cents per spindle; electricity, 2 cents per spindle.

But, owing to the difference in quantity of light furnished, the cost of light for one candle power per spindle per year of 400 hours was: Oil, .238 cents per candle power; dollar gas, .334 cents per candle power; electricity, .304 cents per candle power.

Considering, then, what a mill received for the money, there was very little difference between gas and elec-

tricity, while the cost of the oil light was nearly 80 per cent. of the cost of the electric. This difference is such a small amount per yard of goods that, if the better light is likely to result in better goods, the increased cost should not be considered at all. If, however, a mill is exceptionally situated, either as regards the character of the work, which may not require close examination by the operative, or as regards the supply of power or other facilities for either gas or electricity, the results as shown in the first table may prove to be the most economical guide.

The size of the mill has much to do with selection of the light, particularly if an isolated electric plant is considered. Artificial light is needed for a short time at both ends of the day, morning and evening. If the mill is operated by steam power, it will be necessary for the steam to be kept up to full pressure during the latter part of the day, to provide power for the dynamos. This necessitates strong fires under the boilers at a time when it is customary to let the fires run down in anticipation of the closing of the mill for the day.

This materially increases the cost for power and is a point best appreciated by the fireman, who shovels the coal, and the night watchman who finds the fires in full blast.

This objection does not apply of course in the case of ample water power, or where the works are so large that the load of the dynamo is not a serious burden on the power house. It illustrates, however, the difficulty in laying down any broad rule for lighting textile mills.

The cost of electricity was based on a cost of $22.00 per H. P. per year. This is lower than the cost in most mills, particularly the smaller ones.

Forty per cent. of the estimated cost for oil light was allowed for care of lamps, filling, etc. This in a small mill would be excessive, as such work is usually done by regular hands who can attend to the lights without interfering with their regular duties.

The better diffusion of electric light has made great advances. The use of enclosed arc lamps removes the objection which is often raised to this class of lamps that they dazzle and injure the eyes of the operatives, while throwing the light where it is not needed. They give a brilliant and yet well diffused light which is widely distributed.

Since the figures above quoted were presented, the progress of electrical development has doubtless still further reduced the cost of maintenance as well as initial expense, so that except in very small isolated plants or under exceptional conditions, manufacturers generally recognize the ultimate advantage of lighting by electricity.

An Ounce of Prevention.

II.

The accidents in factories are due generally to such well understood causes, that any words of caution with a view of safeguarding against future accidents, appear dull and common-place until after the accident has happened, when the plain words of warning receive due appreciation. Many serious, often fatal accidents are caused by the design, arrangement, and management of driving belts.

To begin with, the belt itself should be of sufficient strength to stand any strain likely to be put upon it. This equalization of strength and load can often be affected by running the belts at a higher speed to do the same work, thus reducing strain, and lengthening life of belt.

Then there are the splicings which are liable to break. Cemented joints seldom break suddenly, but give usually more or less warning by a loosening of the lap. Careful inspection is the only means of guarding against this defect.

The uncemented joints made to be easily broken for tightening or other purpose are a source of danger not

only by their liability to break, but also by the power they have to inflict injury on the worker when running in a low or otherwise exposed position. Lacing is the least liable to accident in this respect.. Not a few instances of severe lacerations, and permanent disfigurement have come under the author's notice from long and ragged points of some forms of belt screws, while accident from the whipping of loose laces is a common experience.

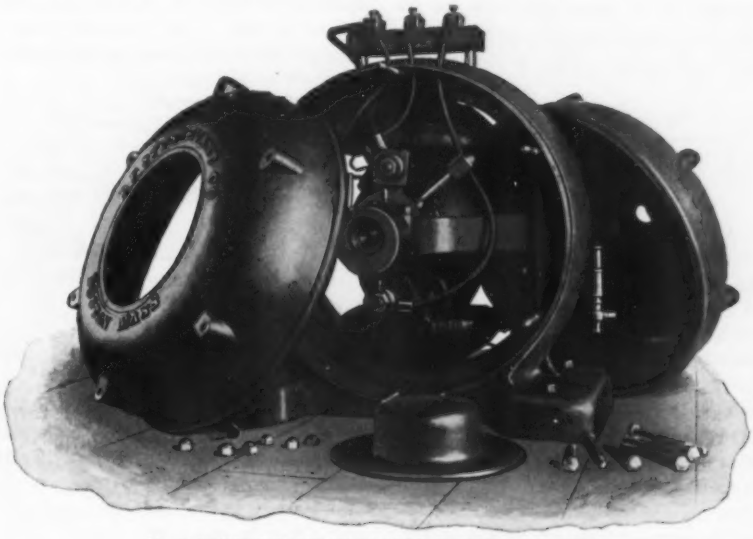
Diagonal or horizontal driving of most machines is necessary, if sufficient frictional contact with the pulley is to be secured, and the portions of belts below seven feet from the floor level should be regarded as dangerous and fenced wherever practicable. For this purpose, sufficiently high fenders of the box wire netting or rail types may be used when the floor space is not restricted.

In the latter case, close fencing is required in the form of a sufficiently thick wooden guard suspended or supported under the lower side of the belt.

In placing a belt in position or unshipping it for repairs, the belt rests on vertical drives on the upper of the two shafts, and in diagonal drives partly on both shafts. At such times there exists the danger of the shaft seizing the belt, winding it up, and dislodging machinery and shafting.

Beside this a low, idle, slowly moving belt is a great temptation to children and young persons about factories.

John Calder in his Prevention of Factory Accidents states that three deaths occurred in one English district by reason of boys seizing idle belts and being dawn to the ceiling and whirled around by the shaft. This danger is removed when the belt is arranged to fall upon a belt support when not in use.



B. F. STURTEVANT ENCLOSED ELECTRIC MOTOR.

A New Type of Enclosed Electric Motor.

This type of motor, built by the B. F. Sturtevant Co., of Boston, Mass., being enclosed and readily portable, in the small and medium sizes, is specially adapted for driving small machines, such as machine tools, blowers, etc. For certain classes of work where the conditions are favorable, the motor may be direct-connected to the machine which is to be driven. Cased fans of the centrifugal type may be thus equipped, and if desired the fan-casing itself may be supported by the motor frame and made adjust-

able about it, so that any direction of air discharged may be provided.

In order to avoid the excessive temperature which is incident to the operation of most enclosed motors, this type has been very carefully designed, so that a low temperature rise can be maintained without greatly increasing the size and weight above that of the ordinary open type.

This machine is capable of continuous operation for ten hours, with a maximum temperature rise not exceeding 60 deg. F. Yokes extending out from the field ring support the armature shaft. The end casings are entirely independent and can be instantly removed to give access to the entire interior. The bearings and brushes can be reached by simply removing the caps in the centre of the casings.

The brushes are of hard carbon, in holders of a modified reaction type, which allows of easy adjustment when it becomes necessary to reverse the direction of rotation of the motor. The bearings are self-oiling and self-aligning, and fitted with composition sleeves, which are removable from the outer ends of the boxes. These motors are built in this type in seven sizes ranging from 1/6 to 5 H. P.

Belts Running on High Part of Pulleys.

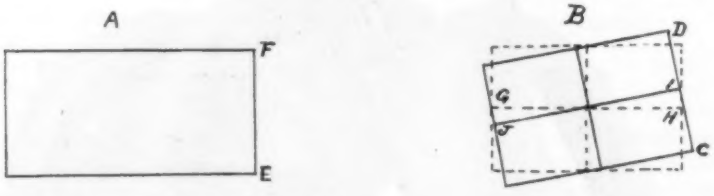
Editor Textile World:

All authorities on mechanics agree in saying that belts always run toward the high part of the pulley, and my observation in many cases confirms the statement, but I find the rule does not apply to cases where the shafts get out of line as shown in the drawing. Pulley B is out of line with pulley A, bringing the side C farther away from E than is the side D. In this case the side C corresponds to the high part of a pulley, and yet in such cases I find the belt running over toward D, which is the low side. Will you explain this?

HIGH-LOW.

The statement that belts always run to the high part of the pulley is correct when speaking of pulleys on shafts that are in line with each other.

In cases where the shafts get out of line, as shown in the illustration, as soon as the belt strikes the pulley that is out of line it is deflected from a straight line, and towards the side of the pulley which is nearest to the other pulley.



PULLEYS OUT OF LINE.

In such cases the receiving pulley acts as a carrier, and turns the belt in a direction at right angles with the shaft. The dotted line represents the pulley when in line with the other one, and a belt on this pulley would be carried straight ahead in the direction of line GH, whereas when the pulley is out of line as shown by the solid line, the belt will be carried in the direction of line IJ, or towards the side of the pulley nearest to the other pulley.

—Scratches Caused by Mineral Matter.—A curious note appears in the Bulletin of the Mulhouse Society on the damage done to calico and rollers during printing, by fragments which turned out to consist of mica, garnet, augite, and zircon. Sufficient care had not been taken to use water free from sediment.

DYEING DEPARTMENT

Dye Recipes for September.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Recipe No. 129.

Black on Cotton Yarn.

Phenedine Black No. 2 on 100 pounds of cotton yarn.

Prepare the dye bath with

5 lbs. Phenedine Black No. 2.

(Sykes & Street, 85 Water St., New York.)

20 lbs. Common Salt.

Enter the yarn at 140° F., raise to boil, and boil for ¾ hour, with regular turning.

Lift, wash, and enter into a fresh bath containing

¼ lb. Methylene Blue 4B 2E.

(Sykes & Street, 85 Water St., New York.)

Work evenly, and gradually raise temperature to 185° F., lift, wash and dry.

Phenedine Black acts as a mordant for basic colors, and thus enables the dyer to obtain some otherwise difficult compound shades.

Recipe No. 130.

Apple Green on Cotton Yarn.

Oregon Green No. 207 on 100 pounds of cotton yarn.

Prepare the dye bath with

3 lbs. Oregon Green No. 207.

(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

2 lbs. Borax.

20 lbs. Glauber's Salt.

Enter goods at 130° F. for 30 minutes, raise to boil and boil ¾ hour, shut steam off and run one-half hour longer.

Oregon Green No. 207 gives a very brilliant shade of apple green, on cotton material, and is also valuable in dyeing felt goods containing cotton.

Recipe No. 131.

Tan on Cotton Yarn.

Direct Tan B on 100 pounds of cotton yarn.

Prepare the dye bath with

4 lbs. Direct Tan B.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the yarn at boil, and continue boiling for one hour, then drain over the kettle, and finally wash. The bath is not exhausted, and subsequent lots require one-third less dyestuff. Should the dyeing be done in a machine, it is a good plan to start the dyeing cold, and raise to the boil while the machine is running.

Direct Tan B produces very full, dark and rich shades of brown, possesses great tinctorial power, and is very suitable for hosiery dyeing, as it goes on the fibre evenly. It will mix with other direct cotton dyestuffs in any proportion.

Recipe No. 132.

Lavender on Cotton Yarn.

Benzo Rhoduline Red 3B on 100 pounds of cotton yarn.

Prepare dye bath with

2½ lbs. Benzo Rhoduline Red 3B.

(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

10 lbs. Glauber's Salt.

½ lb. Soda.

Enter yarn at 170° F., bring to a boil, and dye at this temperature one hour.

Benzo Rhoduline Red 3B possesses remarkable fastness to washing, for a direct cotton color.

Recipe No. 133.

Pink on Worsted Yarn.

Acid Rhodamine R R R on 100 pounds worsted yarn.

Prepare dye bath with

1 lb. Acid Rhodamine R R R.
(A. Klipstein & Co., 122 Pearl St., New York.)

5 lbs. Glauber's Salt.

2 lbs. Sulphuric Acid.

Enter yarn at 140° F., turn while bringing to a boil, and dye at this temperature for 20 to 30 minutes.

Acid Rhodamine R R R is a new coloring matter, most suitable for the dyeing of wool and silk, either hanks or piece goods. It dissolves very easily, and is remarkable for the pure and full shade it produces. It is very fast to alkalies, acids, washing and sulphuring, and its fastness to light is much better than that of eosines, erychrosines, and phloxines.

Recipe No. 134.

Black on Worsted Yarn.

Buffalo Black 10B on 100 pounds worsted yarn.

Prepare the dye bath with

6 lbs. Buffalo Black 10B.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter yarn at 160°-170° F., bring slowly to a boil, and dye at that temperature for one hour, exhausting the bath if possible.

It is well to add the sulphuric acid in separate portions, rather than all at once.

Buffalo Black 10B, when dyed in light shades, such as 2 per cent., is very valuable for mixtures with Acid Violet, etc., producing extremely cheap and bright shades of navy blue.

Recipe No. 135.

Tan on Cotton Yarn.

Direct Tan Y on 100 pounds of cotton yarn.

Prepare the dye bath with

2 lbs. Direct Tan Y.
(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the material at the boil, continue the boiling one hour, drain, and wash.

Should the goods be done in a machine, it is a good plan to start the dyeing cold and raise to the boil while the machine is running.

Direct Tan Y is very valuable for the dyeing of cotton hosiery. It produces a very rich and bright shade of light brown, and possesses great tinctorial power.

Recipe No. 136.

Blue Black on Worsted Yarn.

Alizarine Black 3B on 100 pounds of worsted yarn.

First mordant the yarn in a bath made up with

3 lbs. of Bichromate of Potash.

2 lbs. Tartar.

Enter at 140° F., bring to a boil, and mordant at this temperature for one and one-half hours.

Wash, and dye in a bath made up with

15 lbs. Alizarine Black 3B.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

1 lb. Acetic Acid.

Enter the yarn cold, bring slowly to a boil, and dye at this temperature for one and one-half hours.

Alizarine Black 3B is very valuable for the production of all shades between black and gray on wool, and also in calico printing.

Recipe No. 137.

Blue on Cotton Yarn.

Oregon Blue Y on 100 pounds of cotton yarn.

Prepare the dye bath with

4 lbs. Oregon Blue Y.
(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

10 lbs. Glauber's Salt.
1 lb. Sal Soda.

Enter goods at 170° F. for ¾ hour, bring to boil and boil ½ hour, then run cool for ¾ hour longer.

Oregon Blue Y dyes evenly and possesses all the valuable properties of the direct cotton colors.

Recipe No. 138.

Blue on Worsted Yarn.

Wool Blue R on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Wool Blue R.
(Berlin Aniline Works, 72 Front St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter the yarn at 170-180° F., bring slowly to a boil, and dye at this temperature one hour. It is well to add the Acetic Acid in small portions rather than at once.

Wool Blue R is remarkable for its brilliancy of shade and fastness to washing and fulling.

Recipe No. 139.

Brown on Cotton Yarn.

Alizarine Brown D B D on 100 pounds of cotton yarn.

Prepare the dye bath with

3 lbs. Alizarine Brown D B D.
(Victor Koechl & Co., 122 Hudson St., New York.)
25 lbs. Common Salt.

Enter the yarn at 180° F., bring bath to the boil and dye at this temperature for one hour, working the material for 20 minutes after the heat is turned off.

Alizarine Brown D B D goes on the fibre easily and evenly, and possesses the usual characteristics of the direct cotton colors.

Recipe No. 140.

Yellow on Cotton Yarn.

Direct Yellow G N on 100 pounds of cotton yarn.

Prepare the dye bath with

1½ lbs. Direct Yellow G N.
(Bosson & Lane, 36 Central Wharf, Boston.)

Enter yarn at 180° F., bring to a boil and dye at this temperature for one hour.

Direct Yellow G N is a very even dyeing and fast direct yellow.

Recipe No. 141.

Yellow on Worsted Yarn.

Curcumine S on 100 pounds of worsted yarn.

Prepare the dye bath with

2 lbs. Curcumine S.
(Berlin Aniline Works, 72 Front St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter yarn at 160°-170° F., bring slowly to a boil and dye at this temperature for one hour, exhausting the bath if possible.

Curcumine S produces a brilliant golden yellow, and is valuable in the production of compound shades.

Recipe No. 142.

Black on Cotton Yarn.

Oxydiamine Black J E on 100 pounds cotton yarn.

Prepare the dye bath with

5 lbs. Oxydiamine Black J E.
(Wm. J. Matheson & Co., Ltd., 152 Front St., New York.)
20 lbs. Glauber's Salt.
2 lbs. Soda.

Enter yarn at 170°, bring to a boil, and dye at this temperature for at least one hour.

Oxydiamine Black J E produces an excellent shade of black by a very simple process.

15 lbs. Common Salt.

Recipe No. 143.

Violet on Worsted Yarn.

Violet S O on 100 pounds worsted yarn.

Prepare the dye bath with

2½ lbs. Violet S O.
(C. Bischoff & Co., 87-89 Park Place, New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter yarn at 170° F., bring slowly to a boil and dye at this temperature

for one hour, exhausting the bath if possible.

It is well to add the acid in small portions, rather than all at one time.

Violet S O produces a brilliant shade of violet, possessing excellent qualities.

Recipe No. 144.

Black on Cotton Yarn.

Eclipse Black B on 100 pounds of cotton yarn.

Prepare first dye bath as follows:

Dissolve in 200 gallons of water

5 lbs. Soda Ash.

5 lbs. Sulphide of Soda.

Then add

20 lbs. Eclipse Black B.

(John J. Keller & Co., 104-106 Murray St., New York.)

200 lbs. Common Salt.

Boil up well, enter the goods, and then keep the bath at about 195° F. for one hour.

After entering the yarn, it is advisable to give several turns right away, but after this every ten minutes is sufficient.

It is important that the washing in cold water take place immediately after dyeing, as it prevents the superfluous color from oxydizing on the fibre, and also that as much of the dye liquor as possible may be saved. Squeezing rollers, at the end of the dye tub, would be very advantageous for this purpose.

After being thoroughly washed, the goods are passed on to a fresh bath, prepared with

2 lbs. Bichromate of Potash.

2 lbs. Bluestone.

3 lbs. Acetic Acid.

and worked in this for ½ hour at 195° F. The goods are then well washed and soaped for about 15 minutes.

For second bath

12 lbs. Eclipse Black B

will be sufficient, and

10 lbs. Common Salt,

4 oz. Sodium Sulphide,

4 oz. Soda Ash,

per 10 gallons of water, to make the bath up to the original 200 gallons.

Eclipse Black B gives a black of very good fastness, and after soaping may be shaded off with small quantities of basic dyestuffs dissolved in the rinsing water. It is also suitable for the production of fast gray shades.

Plan of Dye House for a Ten Set Woolen Mill.

Editor Textile World:

I have read with much interest the article on Model Dye House for ten set woolen mill, which appeared in your August issue. It is an important, but greatly neglected subject, and in the hope of awakening interest in it, I venture to submit a few friendly comments on your plan.

Anything that I may offer by way of suggestion will be the outcome of experience of the everyday type, and solely from a practical standpoint. I am the more interested in your idea because the mill in which I am now employed is just of the size and character you describe.

As a background for the sketch, allow me to mention things in our work-room here, that are detrimental. I have no office; no north window anywhere; no all-round circulation of air for a hot day, or for a close stuffy atmosphere at any season of the year; not enough water and steam; no steam-pipe pressure regulator; no sympathy with the trials and ambitions of a would-be up-to-date workman, "no nuthin." It's nice to be a dyer! "It's only for the dyehouse." "Anything's good enough for the dyehouse,"—an expensive and necessary nuisance of a kind with the mill waterclosets.

My dyeroom is on the ground floor of two buildings of two and three stories respectively, and is over-run with iron pillars, thirteen in number, among the tubs, and others about the scouring machine and hydro-extractor, these being used to support the floors overhead. Let no one else perpetrate such outrageous folly. My drug-room roof leaks, and all pastes and liquids freeze in it during winter. Cans of aniline and other dyes get so wet

from steam pouring in at odd times from the kettles that the labels drop off and the tin is eaten into with rust. My dyes, shades, and work are severally located in opposite directions, and at widely separated points, which really wearies me off my feet near the end of a day's labor, and wastes for me lots of time, and for the company that and much more. And yet our mill is very proud of its standing and output, and exports its product beyond the seas. Are there any "pointers" in all this?

First and briefly by way of friendly criticism of your appended article and ground plan, I would say that there are items in both which I very heartily endorse. Among these are your evident desire for proximity in closely related working apparata; your walling off both scouring, carbonizing and drying from the dyeroom proper; and your intenion of having things rationally arranged so as to "give the dyer a chance." Amen. At the same time let me qualify a feature or two. Your circular kettles (or wool tubs), are placed too close to each other. It is commendable to have them in pairs, but there should be a clear space of about a couple of feet between them to insure sufficient room for poling all around quite freely. If they must stand back to the wall, then the space between each must be increased. I should prefer to locate the tubs back from the wall about three feet. This would secure more even work.

Provide abundance of both steam and water. Let the diameter of piping for these be well in excess of present requirements. You can't afford to have men standing about waiting for either. In consequence of the growing demand for mixtures of all sorts of animal and vegetable stock, and a wide range of colors in the product of the mill I should say that you will have to provide a couple of fifty pound wool kettles and another one or two with capacity for ten to thirty pounds, besides the larger vats. These you will want for samples and small lots. A rinse-box, placed in the vicinity of the wool washer possibly, should not be omitted.

The dryer needs enlargement and should be tightly enclosed from the moisture and mess of the other departments. Two or three compartments will probably be found best,—each large enough for a kettleful from the big tubs. Arrange so as to blow the surplus hot air from dryers through into the dyeroom for ventilating purposes when required. Secure one of the best and most nearly noiseless exhaust fans to draw the steam out of the place.

Have a little "hot spot" somewhere, about a foot square or less, in which to dry shades quickly whether the wool dryers are in use or not at any given time. Just today I was chagrined by having to wait thirty minutes for a clipping of serge to get dry so that I could match it. By the time my 3 in. by 5 in. clipping was dried the pieces in my kettle were of course nothing like it.

Don't be afraid to let sunshine into the rooms through plenty of wisely located windows. The sashes should not be too wide and heavy, and ought to run up and down freely in their frames without binding. Let us feel out of doors like all that is practicable in the trying and debilitating atmosphere of the dyehouse. Around the piece and yarn kettles, give particular attention to light and removal of steam. Guard against droppings of oil and rust from shaftings, sprinklers, etc. overhead. Drainage needs to be well attended to from the outset. Be liberal about that.

The floor should be smooth enough to admit of trucks being moved without too many hands behind them. The dyed and dried stock (raw stock), should pass conveniently by hoist or otherwise to its resting place in adjacent picker-room or storehouse. In short make up your mind that the dyehouse and appurtenances constitute one of the most important departments in the entire mill plant; and

that on the score of economy alone they must be brought fully up to the times. I have written sufficient for the nonce.

PRACTICE.

We consider the comments which our correspondents makes to be very good, particularly those in regard to size and position of dyetubs. The writer, when making the plan, had a drying machine in mind, while Practice evidently was considering the flat bed dryers, which occupy much more floor space.

Nottingham Fast Black.

Editor Textile World:

I send you a formula for a perfectly fast black on cotton, which you may publish, if you wish, for the readers of the Textile World. It was introduced to the hosiery trade by my father, who run a large hosiery dye works and finishing establishment in the Nottingham district, and was brought out especially for the Morleys' use. This process gives a first-class black, with nothing injurious to affect the skin. I have seen it stand an atmospheric test for nearly 20 years, and can also guarantee it to stand a full bleach by the chloride process without fear of stripping the color, as I have used unbleached cotton with the black for stripes and given it a full bleach without bleeding. Any practical man can figure the cost of dyeing by the cost of ½ dip navy and light cutch brown added. I shall be pleased to give any further information upon request.

W. H. T.

Formula for Fast Black on Cotton, in Skein or Warp, Especially for Hosiery, for 100 lbs. of Stock.

First give in indigo vat or common copperas vat, say, three dips or a half navy shade for a blue bottom. Let stand to oxidize the indigo. Then wash in two waters. Next give it cold or lukewarm vitrol sour wash, and turn in a bath at 120 degrees to 140 degrees, with 3 to 5 lbs. common soda, 1 water, crush. Next get up dye liquor about 200 degrees to 212 degrees, with, say, 7½ to 10 lbs. dark cutch, 15 to 20 oz. blue stone or sulphate copper and 5 to 10 lbs. logwood. Turn ½ to ¾ hour. Lay up, crush, or light whiz, and next turn in bath of bichrome, say, for 100 lbs. cotton 3 to 4½ lbs. bichrome at 200 degrees. Turn ½ hour. If dark enough, wash in two waters, whiz and dry. If not dark enough, can return in cutch and bichrome, then wash and dry. If for extra soft finish, take out of dry room and give oil soap lather and dry out of same. The cutch and logwood bath can be kept as a standing bath, but advise fresh bichrome bath for each lot, to insure a clean color. A dyer can change above formula to suit his purpose.

Decoloration of Rags.

In the July issue of the Textile World, mention was made of a new process for stripping the color from rags. This method has been discovered by two German chemists, who, it is stated, have succeeded in stripping the color, so as to leave the stock almost white.

The colored stock is boiled in a solution of hydrosulphite acid, a product of the reaction of zinc dust on bisulphite. The color is destroyed in a very short time. Of the hydrosulphite solution, only a comparatively small quantity is required, and with most of the rags, especially those of cloth, stockings, and woolen fabrics generally, a thorough decoloration is said to be obtained, so that the goods manufactured from them appear almost white, and as if manufactured from fresh wool.

It is said that this process does not injure the fibre. If all that is claimed for it is true, it certainly will be of great benefit to dyers and manufacturers. The following directions for the operation have been published abroad: 220 lbs. of dyed rags (bordeaux, scarlet red, navy blue,

green), so-called "Thibet," are boiled with about 400 to 500 galls. of water and 26 to 40 galls. of hydrosulphite solution, the rags being from time to time turned to enable the liquid to thoroughly penetrate them. After boiling for about half-an-hour the process is complete, the rags having become nearly white. They are then washed in a cold bath, dried, and are ready for manufacture.

The hydrosulphite solution is prepared by diluting 5 galls. of sodium bisulphite of 38° Be. specific gravity with 48 galls. of water at 30 to 40° C. and adding gradually 8¾ lbs. of zinc dust, while the mixture is well stirred. After the reaction is complete, the whole is allowed to rest and the clear liquid is employed. Instead of sodium bisulphite, potassium or ammonium bisulphite may be used.

Instead of the separately prepared hydrosulphite solution the bisulphite and zinc dust may be added directly to the bath, but this method is not to be recommended as the material is soiled by the zinc dust. The rags may be boiled in either an open or close receiver; in the latter case less hydrosulphite is required, but with the same result.

Fast Khaki Shades.

Leather-colored khaki shades vary from yellow to greyish-red, and are sometimes produced by combinations of the substantive dyes, and sometimes from dyewoods, such as catechu, quercitron, and logwood. As a rule, however, the fastness is not satisfactory, and while the substantive dyes fail in resisting light or acid, the dyewoods are not fast enough to washing, and after finishing are not fast to acid.

The chamois colors with chrome, says the Textile Manufacturer, are however fast to light and washing, and to make them thoroughly fast to mineral acids it is sufficient to add a Turkey-red oil bath to the ordinary dyeing process, and then to cause the oil to combine with the metallic oxides by steaming under pressure.

The details and the process are as follows:—The well-scoured or half-bleached goods are taken on the jigger through a bath containing 2 per cent. of its value of sulphate of iron 45° Be., and to every 22 gals., 25 lb. of chrome alum, previously dissolved in water, as well as from three-quarters to a whole pint of pyroligneate of iron, for the gray shade, are added. Pass the goods through this about six times. Next turn the roll upside down to distribute the mordant evenly, and after half-an-hour pass through twice more.

Then enter immediately into a hot bath of ½ lb. of soda to the gallon. Give three passes through this. Then wash dry, and pass through the Turkey-oil bath, which contains 20 per cent. of Turkey-red oil, containing 30 per cent. of castor oil. Then dry and steam one hour at 7 lb. per square inch. Finish as usual, but remember that oil has been already added. The process can of course be carried out in a machine.

The following recipes give a guide for the production of the various shades. All are for 22 gals. a bath:—(1.) Reddish-yellow: 3½ pints persulphate of iron 45° Be., 27 lbs. chrome alum, and from ¾ to 1 pint pyroligneate of iron 12° Be. (2.) Yellowish-green: 1¾ pint ferric sulphate 45° Be., 20 lb. chrome alum, and from ¾ to 1 pint pyroligneate of iron 12° Be. (3.) Intermediate colors: 1¾ pint ferric sulphate and 30 lb. chrome alum; or 1¾ pint ferric sulphate, 20 lb. chrome-alum, and 3½ pints pyroligneate of iron; or 1¼ pint ferric sulphate, 25 lb. chrome alum, and ½ pint pyroligneate of iron.

Colors in Artificial Light.

Several artificial lights have been recommended as a substitute for daylight in color examination, but only two are of real service—the magnesium and the electric arc lights. The magnesium light (says the "Upholstery Trade Review"), is of great service to the dyer who has not the advantage of the electric arc light. Under favorable atmospheric conditions, the dyer, by examining his shades in the light of

burning magnesium, may get their true daylight aspect.

For the purpose of color examination various types of magnesium lamps are sold, but to one who is skilled in noting at a glance any little differences in shade, it is often found that about a foot of magnesium ribbon held while burning by a small pair of pliers serves the purpose equally well. The aspect of colors under the electric arc light is, in nearly every case, identical with good daylight. There are, however, a few special cases where the dyed colors are extremely sensitive to any variation in the purity of light; and in these a slight difference is noticed between their daylight and electric arc light aspect.

In making a careful examination of dyed fabrics, the dyer often experiences much difficulty in matching perfectly a certain color dyed on velvet, or any rich material having a cut pile. Here the phenomenon of internal reflection shows itself, and also the dichroic properties of the colors become apparent. Colors dyed on velvet-surfaced materials are much deepened and enriched, owing to the repeated reflections within the interstices of the fibres, the effect being the same as if the dyed colors were illuminated with a light of their own color. The deepening by repeated reflections tends to modify the hue. In making a perfect match on such fabrics, it is necessary to cut the trial swatches so as to form a pile.

To achieve a perfect color match, the dyer must try to use the same dyestuffs as are employed in the original color; it is often difficult to get a perfect match to the natural dyestuffs with the coal-tar colors. A piece of upholstery, a carpet, or in fact any dyed or printed material, which has been colored solely with the natural dyestuffs, may be very closely matched in daylight with colors of coal-tar origin; but if these two pieces of colored fabric be examined in an artificial light a wide difference is found between them.

Stripping Indirect Colors.

In a recent issue of Le Moniteur de la Teinture, three methods of removing the indirect colors from cotton are given:—

1. The cotton, dyed and diazotized, is entered, while still wet, in a solution of permanganate of potash. For 100 pounds of cotton, two pounds of permanganate of potash is dissolved in 240 gallons of water. The cotton is allowed to remain in this solution until the bath is exhausted. This fixes on the fibre a light coating of peroxide of manganese.

The cotton is then taken out and entered into a new bath composed of four ounces muriatic acid per gallon of water. Naissent chlorine is formed on the fibre, which destroys the color, and does not injure the cotton.

2. A solution is made, composed of eight pounds tin salt and one litre of muriatic acid per litre of water. When cold, this liquor will bleach any color capable of being stripped, and without injury to the fibre, providing the operation is followed by a thorough scouring. This bleach acts more rapidly when warm, and, if used hot, care should be taken to weaken the strength of the solution. In the hot bath diazotized black is first changed to a blue-black, then to a dark blue, and finally to white. When the right shade is reached, the cotton should be washed immediately. If the process is carried too far, it leaves the cotton a light cream color. Ferrocianid of tin is not open to this objection, but the cost is higher. The bath can be used over again. The workmen should wear gloves to protect their hands from action of liquor.

3. The liquor is prepared by dissolving in water 10 pounds hydrosulphite of soda per each 100 pounds cotton. At the boiling point this solution strips the color from the cotton without altering the fibre, and affords an easy method by which "off shades" can be remedied.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

Test for Cotton in Cloth.

Editor Textile World:

How can I determine whether goods contain cotton and the quantity present?

Cotton.

The presence and quantity of cotton in goods can be ascertained by weighing a sample of the cloth and then boiling it in a solution of caustic potash, which will dissolve the wool and leave the cotton intact. Dry out the residue and weigh it. This will give you the proportion of cotton.

Piece Dyed Goods.

Editor Textile World:

How are piece dyed woolens colored, and what distinguishes them from other goods?

Piece Dye.

Piece dyed woolens are, as their name implies, dyed after the cloth is woven, and are distinguished by this method from goods made of stock which has been colored when still in the raw state.

Test for Indigo.

Editor Textile World:

What is the best test to determine whether goods are colored with pure indigo?

Indigo.

A good test for indigo blue on wool, is to drop a small quantity of nitric acid on the goods and leave it to dry out, when, if the goods are pure indigo, the centre of the spot will be bright yellow, with a border of green.

For testing indigo blue on cotton, the simplest and safest way is to burn a piece of the goods on a porcelain plate. If the color is indigo, that part of the plate where the indigo burns will be covered with a blue indigo film. No other coloring matter will show a similar reaction.

Sizing for Single Worsted Yarn.

Editor Textile World:

Can you give me a recipe for sizing worsted yarn? Is any special preparation used for single yarn?

Foreman.

A good quality of glue answers well for sizing worsted yarn. There is no special size used for single yarns. These yarns require, however, to be well sized owing to their lack of strength and the liability to "chafing" when being woven. There are a number of good substitutes for glue on the market, but as the conditions under which sizing is required vary so widely, each manufacturer should find out by actual trial which size is best adapted for his purpose.

Condition of Cotton Crop.

Editor Textile World:

What is meant when the condition of the cotton crop is reported as 84?

Supply.

The U. S. Department of Agriculture makes observations and regular reports as to the condition of the cotton crop throughout the country. These reports show the percentage of a full crop, which the department's observations indicate. The basis or unit of comparison is 100, which is the standard of full condition, representing perfect healthfulness, exemption from injury from insects or drought or other causes, with average growth and development; 100 means a prospect for a full crop. The average condition reported Aug. 1st, 1899, was 84, which meant that the conditions on that day indicated 84 per cent. of a full crop.

Removing Odor of Smoke.

Editor Textile World:

What will take odor of smoke from hosiery?

Sox.

Scouring and refinishing is the only process we can recommend. The application of any substance which would counteract the odor of smoke would be apt either to injure the goods or leave an odor as objectionable as that of the smoke itself.

Absorbent Cotton.

Editor Textile World:

Will you be kind enough to inform me where I can get information as to process of making absorbent cotton?

J. L. T.

The April, 1889, issue of the Textile World contained this information, on page 98. The general idea of making absorbent cotton is to prepare it so that all natural oil that may be attached to the fibre is thoroughly removed, so as to make it as absorbent as possible. Any process that will accomplish this end is what is desired.

Sewing Machine Tables.

Editor Textile World:

In your August number I notice an article on Power Sewing Machine Tables. Please give me the name of the concern who manufactures this table.

A Knitting Mill.

Most of the builders of sewing machines for manufacturers' use make tables of their own. By reference to the Buyers' Index of the Textile World, you can get their addresses. The Tolhurst Machine Co., Troy, makes a specially designed cast iron leg for sewing machine tables, and many mills use these legs and construct the balance of the table themselves.

Flax Spinning.

Editor Textile World:

An inquirer in your July number asks for the best book on flax spinning, and I note you recommend Sharp's "Flax, Tow and Jute Spinning." I am a practical spinner, and have in my possession both that book and another by Leslie C. Marshall, Belfast, Ireland, and give the latter preference, and think it is by far the most instructive. I am anxious to have the linen industry in this country prosper.

W. A.

Bleaching Woolens.

Editor Textile World:

I have for the past few years noticed many recipes in the textile papers for bleaching different kinds of woolens and mixtures with the peroxides, but have not seen a clear and impartial statement of the advantages in using them instead of the sulphur bleach.

But if you do convince me that it would pay me to throw out the sulphur and adopt the peroxides, I am hardly better off than before, as there are a number of peroxides, each one being called better than the other. Will you give me information that will enable me to decide this question right?

B. W.

The sulphurous acid, whether in the form of gas, as in burning sulphur, or in solution, as sulphurous acid solution, or bisulphite, or bleaching liquor, bleaches by attracting the oxygen of the coloring matter, forming therewith sulphuric acid and leaving a colorless compound. This compound is, however, in an under-oxidized state, and will take from the air sufficient oxygen to restore the original coloring matter. Therefore the sulphurous bleach does not yield permanent results. Furthermore the sulphuric acid generated is harmful to vegetable fibre, for which reason mixed goods should never be bleached with sulphur.

The peroxides bleach in just the opposite manner, that is, by themselves, parting with some of their surplus oxygen, which oxidizes the coloring matter into a colorless compound, which, it is believed, at the same time becomes soluble. There is nothing in the atmosphere which could then reproduce the original color, and therefore the resulting bleach is permanent and does not "yellow."

As to which of the peroxides is to be preferred, we will let our correspondent draw his own conclusions after describing the two principal kinds.

Peroxide of hydrogen is a rather unstable liquid, one whose strength is affected by heat, cold and motion. It should therefore always be used fresh. It is usually sold as of 10 volume strength at about 50 cents per gallon. When received it should be tested and then diluted with cold water to the requisite strength, after which the well cleaned goods are entered, and bleaching carried on either warm or cold.

Peroxide of sodium is a stable powder, which, if its container remains closed, will keep indefinitely. Sansone estimates its strength at 140 volumes. (Thus about ⅝ of a pound of sodium is equal in bleaching power to 1 gallon of hydrogen). It sells at about 50 cents per pound. The modus operandi is to sour the bath with sulphuric or oxalic acid, then add the powder until the bath is neutral, after which add ammonia until the solution is very slightly alkaline, and proceed as above.

Roofing a Steep Roof.

Editor Textile World:

The shingle roof on our mill must be replaced with a new roof of some kind. The roof is a gable and quite steep.

What kind of a roof would you advise?

Shingle.

We believe that under the conditions named, where you have a roof with a good pitch, you cannot do better than reshingle it. On a steep roof slate is more dangerous. It is apt to chip off and break. Tin, while one of the best for flat surfaces, requires frequent painting to prevent rust. Patent roofings, like felt, granite, etc., are most used for flat surfaces. The shingles should not be painted, as experiments have shown that the unpainted shingle roof lasts longer

than the painted one. Shingle stain is much better than paint. Edward Atkinson of the Boston Manufacturers' Mutual Fire Insurance Co., says that shingles, laid in mortar, make the best covering for a steep pitched gable roof. This is an old practice. The shingles should be nailed with long Sweede's iron nails, the shinglers following the men who lay the mortar, driving while it is still moist. Such a roof is safer, warmer in winter and cooler in summer. Mr. Atkinson states he has seen shingles laid in this way which have been in use for over fifty years, and were nearly worn through at the lap, while the under side of the board was fresh and clear.

Test for the Fastness of Colors.

Editor Textile World:

What is the best test for the fastness of colors to sunlight and air?

Fast.

A sample of the goods is fastened to a board, one-half being covered up, leaving the rest exposed to the action of the elements. If more than one sample is to be tested, each one should be cut or slit in some way to distinguish it and a careful record is kept of samples and dates when exposure began.

The samples are then placed outdoors where the sun and other weather conditions may best affect them.

This test is more severe than the actual conditions met with in the wearing of clothing, because they are thoroughly exposed to the rain, whereas the wearer of clothing protects his garments from the showers. It is, however, the test usually adopted, and for comparing one sample with another is all right if both samples are tested side by side.

New Publications.

The Science of Color Mixing, by David Paterson, F. C. S.; Scott, Greenwood & Co., London; 41 illustrations, 5 colored plates and 11 dyed fabric samples. Price, $3.50. This work has recently been published. We have received the table of contents, which includes subjects that Mr. Paterson is well qualified to treat.

Contents: I. Color a Sensation; Colors of Illuminated Bodies; Colors of Opaque and Transparent Bodies; Surface Color. II. Analysis of Light; Spectrum; Homogeneous Colors; Ready Method of Obtaining a Spectrum. III. Examination of Solar Spectrum; The Spectroscope and its Construction; Colorists' Use of the Spectroscope. IV. Color by Absorption; Solutions and Dyed Fabrics; Dichroic Colored Fabrics in Gaslight. V. Color Primaries of the Scientist versus the Dyer and Artist; Color Mixing by Rotation and by Dyeing; Hue, Purity, Brightness; Tints, Shades, Scales, Tones, Sad and Sombre Colors. VI. Color Mixing: Pure and Impure Greens, Orange and Violets; Large Variety of Shades from Few Colors; Consideration of the Practical Primaries: Red, Yellow and Blue. VII. Secondary Colors; Nomenclature of Violet and Purple Group; Tints and Shades of Violet; Changes in Artificial Light. VIII. Tertiary Shades; Broken Hues; Absorption Spectra of Tertiary Shades. Appendix: Four Plates with Dyed Specimens Illustrating Text. Index.

Cards and Carding by J. Renel; Baudry & Co., Paris, France. Illustrated. 150 pages. This work in the French language treats of the carding of wool for both woolen and worsted yarn, and the preparatory process of picking is also included in the work. The author in the preface speaks of the need of training French workmen to be overseers in French mills, and calls attention to the large number of foreign overseers who find employment in France. The book has been written with this end in view, namely, to instruct French workmen.

It treats of the various machines, the card clothing, methods of handling the stock, and compares the merits of the various machines and methods. The different oils used on the stock, in both wool and worsted carding receive attention.

There are several interesting sections devoted to the carding of very low stock, such as rags, waste, etc.

It is written from a practical standpoint, and contains much useful information.

Basic Dyestuffs on Cotton Yarn. W. J. Matheson & Co., New York. This is a color card containing 111 shades on cotton yarn, colored with the Basic colors, Water Blue, Croceine and Eosine. Directions are given for handling the yarn and dyestuff, also formulas for each shade. The samples are well mounted, and illustrate well the facilities afforded the dyer of today in producing and matching shades.

Hints on the Packing and Preservation of Merchandise in the Tropics. The Indian Textile Journal Co. Price 8d. Bombay. This is a pamphlet giving valuable directions for packing goods intended for the tropics, especially for India. It is written in a clear, condensed style. Each class of goods is taken up and specific information given with hints about what to provide for and guard against.

Interesting facts connected with the effects of the moisture of the atmosphere in the tropics are given. The author states that the difference of length in a piece of closely woven, unsized calico, exposed to the air in the shade in February, the driest month of the year in Bombay, amounts to 3 per cent. between one day and another. Between wet and dry weather the alteration of length is much greater. Sized goods alter less in length than unsized fabrics.

It is a very interesting work and will be found useful by all engaged in trade with tropical countries.

Gray and Mode Shades from Immedial Blue, Black and Bronze: New York, W. J. Matheson & Co. This is a pattern card showing ninety-six shades on cotton yarn. The colors produced are bright and attractive, and are so arranged as to show the changes produced in the shade

by subsequent treatment of the goods with bichromate of potash, sulphate of copper, chrome alum, or sulphate of copper.

Industrial News.

—An interesting study in methods of publicity and promotion is presented by the progress of the B. F. Sturtevant Co., of Boston, Mass., during the past few years. This company devoting itself principally to the manufacture of blowers, has gradually evolved many special types designed for specific uses. It has not been deemed sufficient to merely advertise these types, but exhaustive study has been made of the conditions and best methods of application, special treatises have been prepared upon these subjects, purely educational articles regarding them have appeared in the technical press, and special illustrated lectures have been delivered before technical schools and societies. Some of these lectures, devoid of all reference to the B. F. Sturtevant Co., have been published for free distribution with gratifying results. Among recent publications are lectures by Walter B. Snow, of the engineering staff, entitled "The Influence of Mechanical Draft upon the Ultimate Efficiency of Steam Boilers," "Mechanical Ventilation and Heating by a Forced Circulation of Warm Air" and "The Application of Mechanical Draft to Stationary Boilers." Any one of these publications will be sent upon request.

Johnston Patent Vertical Cloth Dryer.

This machine manufactured by E. M. Antisdel, Utica, N. Y. (See advertisement), has been adopted by some of our best knitting mills. It has a rotary head, and after cloth is started, it works automatically. It is claimed that it will bring out the stripe and wale of the cloth perfectly straight on any kind of tubular fabric.

If goods are dried with the wale and stripe uniform, they will remain so, as any subsequent disarrangement on the napper or elsewhere, will be but temporary, the goods quickly resuming the position in which they were dried.

This machine occupies but little floor space and can be set up between horizontal dryers, which are now in common use.

A. Frey, superintendent Oneita Knitting Mills, says, "Without any doubt, you have the best drying machine in the market."

Sunlight.

Artificial light, in whatever way produced, is expensive.

In many plants small windows, and few of them have served to keep the sunlight out, and that which has been allowed to enter has fallen upon dull, dark colored walls and ceilings, which absorb and waste the greater part of it

Let the sunlight come into the mill through plenty of large windows, and after it is in, let it be reflected from light colored walls and ceilings to the machines and material in process. Under such conditions the electric, gas, or oil light can be shut off much earlier in the morning, and turned on much later in the afternoon of the short days of winter.

In addition to economy, there is at all times the advantage of bright, cheerful and attractive workrooms and offices, making every one feel better and work better, and making a vastly better impression on all who visit the mill.

To keep the walls in good condition, some kind of wall coating is necessary. Muresco is one that has stood the test of time, which has proved it to be economical and durable. It comes in a dry powder, and the addition of boiling water prepares it for use. It can be used on walls of any material and the manufacturers, Benj. Moore & Co., 244-258 Water St., Brooklyn, New York, state that it is sanitary and non-combustible. It comes in white and fourteen attractive colors. The manufacturers will be pleased to send further particulars with descriptive booklet and color card to any one interested.

Benjamin Booth & Company, Ltd.

Benj. Booth & Co., 1717-29 Bodine St., Philadelphia, manufacturers of card clothing, has been incorporated as a limited company, and will be known in the future as Benjamin Booth & Company, Ltd. The personnel of the concern remains as before.

Egyptian Cotton.

Messrs. Stoddard, Haserick, Richards & Company, Boston and Bradford, announce the consolidation of the several businesses carried on at London, Liverpool and Manchester, under the style of Carver Brothers & Company, Ltd. After a most careful deliberation the Fine Cotton Spinners & Doublers Association, Limited, have appointed Messrs. Carver Brothers and Company, Limited, as their buyers in Alexandria. This Association includes most of the large concerns in the English fine spinning district.

There will be no change made in the conduct of the business, and the management will be in the hands of the respective partners as formerly, but our American clients will be materially benefited by the above change. Messrs. Carver have had an experience of over 40 years in Alexandria, and their appointment confirms the opinion of their judgment and care held by English spinners. The appointment will, of course, add very largely to their buying requirements, and such being the case, they will naturally attract the greater interest of the sellers in Egypt, who have always satisfaction in dealing where they feel more certain of a regular demand for their stocks. The large development of Messrs. Carver's American business has demonstrated the fact that they already possessed distinct buying advantages, and we are pleased to know that these advantages will be still further increased.

Messrs. Stoddard, Haserick, Richards & Co., have long been the American representatives of Carver & Company, Alexandria.

The Warren Company.

The Warren Mfg. Co., of Chicago, manufacturers and jobbers of Power Transmission Supplies, has just been incorporated under the laws of Illinois as "The Warren Co." with the following officers: Charles E. Raymond, president; Chauncey T. Lamb, vice-president; Al-

fred I. Warren, general manager and treasurer, and Henry Becker, secretary.

This company will continue to operate with general offices in Chicago, their factory being at Hinsdale, Ill. This company report their business to be growing very rapidly. Judging from the reports coming in from the users of their Liquid Pulley Cover, used for the prevention of belt slipping, this article seems to have a bright future before it.

Cling-Surface in Bristol Mfg. Co.

The following letter shows the results of cling-surface in a textile plant.

We have been using Cling-Surface in a ten (10) inch belt that was running seven hundred (700) feet a minute, the belt drives thirty (30) horse power. The belt gave us a good deal of trouble before we used Cling-Surface but now we don't have any trouble at all with it.

S. P. Reynolds, Supt.,
Bristol (Conn.) Mfg. Co.

Save Knitting Waste.

The new back-winding machine built and sold by James Taylor, 835 Arch St., Philadelphia, is proving itself to be all that is claimed for it, and wherever it has been tried it is giving great results. Manufacturers wishing to economize in their knitting mills, can make no mistake in getting one of these machines. It ravels and back-winds onto reels, waste pieces and seconds that have been knit on machines having any number of feeds up to and including eight, and is the only machine of its class ever put on the market.

American Correspondence School of Textiles.

The success which this institution has met with from its very beginning is very gratifying, especially as it is founded upon the merit of the courses offered to mill men the world over.

The outlook for the coming year is very promising and the enrollment will doubtless be larger than ever before in the history of the school. No young man today, no matter how far removed from educational centres, need be without the theoretical knowledge of his work, as the Correspondence Schools have removed the obstacle of distance, and hundreds of students are successfully carrying on courses of instruction, and by combining theory with practice in the mill, adding to their ability and salary earning capacity. Any one desiring a free illustrated catalogue may secure one by addressing the school at its headquarters, New Bedford, Mass.

In Case of Fire.

Very frequently, the greatest loss and inconvenience from a fire, especially a partial one, arises on account of delay in being able to resume work, pending the adjustment of insurance. Here is where the value of the services of an appraisal by the American Appraisal Company, of Milwaukee and New York, comes in. They make such an accurate inventory and appraisal of manufacturing property that it is of the greatest benefit in a question of adjustment of insurance, and is promptly accepted by the insurance adjusters. An instance in point occurred to the plant of the New England Box Company, at Winchester, N. H., who, on January 1st, 1899, had the American Appraisal Company make an inventory of all of their plants. Over a year later, they had a serious fire at Winchester, in regard to which they state: "The insurance adjusters inform us that they have never had a claim for loss presented to them in as good shape as ours was, and we find that in making a settlement our inventory was of the greatest value. Entire adjustment was made in two days, and we were able at once to proceed to repair damages. We were mildly enthusiastic over your work before, but are vastly more so now."

Winder Bobbins, Etc.

It seems to be generally taken for granted that, where a manufacturer's goods command the respect and trade of his immediate neighbors, those at a distance can safely rely on such goods for quality and price. As the Cohoes Union Bobbin Works, Cohoes, N. Y., make an especially good winder bobbin, which they supply to many of the knit goods manufacturers in Cohoes, and hold their trade, it is fair to presume their price and business methods are right, and that they will give distant customers the same consideration.

This company, of which G. H. Crandall is proprietor, owing to the increased demand for their bobbins and spools of various kinds, have within the past year increased their plant and facilities for manufacturing these articles and, as they have always on hand a large supply of well seasoned stock, are now in a position to fill orders promptly.

Mr. Crandall is ably assisted by a man of long experience in the manufacture of bobbins and spools of all kinds, is familiar with the wants of the trade, and competent to supply them with the proper article at the right price. Mr. Crandall will gladly furnish any additional information concerning winder bobbins, jack spools, etc.

A Useful Souvenir.

We have received from the Saginaw Mfg. Co., Saginaw, Mich., a souvenir rule which they are distributing to the trade.

It is 12 inches long. The inches (divided into sixteenths), and centimetres of the metric system are marked side by side so as to be easily compared. This little rule will do much toward familiarizing people with the metric system, the use of which is being so rapidly extended throughout the world. The metric measurements so frequently met with are a puzzle to the majority of American readers, but by the use of this little rule, which can be folded up and carried in the vest pocket, the equivalent of centimetres in inches is seen at a glance.

With this rule the Saginaw Mfg. Co. is mailing their new price list of Gilbert Wood Split Pulleys for any size from a 3-inch diam. or 2-inch face up to 72-inch diam. and 24-inch face. Besides these standard sizes, this firm makes any kind of special pulley to order.

Long experience in the business, and care taken in the manufacture of wood pulleys, have made this company widely

and favorably known, as is shown by the large business they are now doing. They have branches at 44 Dey St., New York; 35 S. Canal St., Chicago, and sales agencies in all the principal cities.

Increased Capacity.

The business of the Kensington Dye Works, T. Brophy's Sons, Jasper St., above Clearfield, Philadelphia, Pa., has increased to such an extent that this firm have been compelled to add to their already large capacity, by the addition of a new dyehouse, 80 by 32 ft., and of a new store house 40 by 32 ft.

Howard & Bullough American Machine Company.

The Lowell Cotton Mills, Lowell, N. C., who placed their order a few months ago for machinery with the Howard & Bullough American Machine Co., Pawtucket, R. I., are rapidly getting into running order. The building is completed and the machinery is now being installed and erected. This will be one of the most thoroughly equipped and up to date mills in the South.

Repeat orders have been received by the Howard & Bullough Co. from the Ipswich Mills, Ipswich, Mass., for picking machinery, cards, drawing and spinning frames; and from The Tolar, Hart & Holt Mills, Fayetteville, N. C., for picking machinery, cards, drawing, speeders and spinning frames.

Persons Seeking Homes.

Persons seeking homes or investments, or firms and corporations seeking locations in the South and who desire information about Tennessee would do well to address Robert Gates, special industrial and immigration agent, Louisville & Nashville R. R. for Tennessee, at Nashville, Tenn.

Rock Maple Logs.

Birch Bros., Somerville, Mass., have made arrangements to have logs suitable for bleachers' and other purposes, selected and cut by experienced woodmen, and shipped direct to purchasers from the lumber regions. Logs cut in the fall are better than when cut at any other time. For orders placed now, the trees will be marked for cutting at proper season.

The New Ring Frame Thread Protector.

The Ring Frame Thread Protector Co. is now putting on the market, the invention of Messrs. Wall and Schedelbauer of Amsterdam, N. Y., which was illustrated in the August Textile World. It is claimed to be more than a Separator, and the following letter from Collins Bros., of Central Falls, shows what an advantage they think it is. The frames in S. Sanford & Sons' warp mill have been running for months and every opportunity given to test the device, which is now offered to cotton manufacturers with every assurance that it will do what is claimed. Their advertisement giving the claims will be found on another page of this issue.

Central Falls, R. I., Aug. 23, 1900.
Ring Frame Thread Protector Co., Amsterdam, N. Y.

Dear Sirs: We have built up to date for S. Sanford & Sons, of Amsterdam, N. Y., twenty-eight spinning frames 2¼ inch ring, 7 inch traverse, and they all have on your thread protector, and from reports from the mill they are giving the highest satisfaction.

Large rings, long traverse and fast speed make ends strike together. Your patent protector prevents this and thereby increases the production thirty per cent.

We Collins Bros. take pleasure in recommending this protector to any one using spinning frames, knowing as we do that it is a good thing.

Yours truly,
(Signed) Collins Bros.

—The Jeffrey Manufacturing Company of Columbus, Ohio was awarded a gold medal at the Paris Exposition covering its line of Elevating-Conveying, and Mining Machinery. No doubt many of our readers who have enjoyed a visit abroad this summer have had the pleasure of seeing the exhibit of this company.

Lustre for Wool and Cotton.

A French patent has been taken out for the old idea of lustring wool and cotton by means of a solution of real silk in caustic lye. Soda lye of 36° Be. is put into an earthenware vessel, and to it are added raw silk scraps, fragments of cocoons —in fact, any raw waste—to the amount of 3 per cent. of the caustic soda used. The solution obtained is diluted to 10° Be. if it is to be used cold, to 3° to 5° Be. if hot. The fabrics are then plunged in, and after about ten minutes' immersion centrifuged, scoured, rinsed, and dried at a low temperature. It is said that the prepared fabrics can be dyed perfectly well.

New Burr Picker.

The Yorkshire, Eng., Woolcombers' Association have just acquired the patent rights for Great Britain of a machine of French origin, for the extraction of the "burrs," which have hitherto proved a great difficulty to the wool-comber. The process is not chemical but mechanical, and is effected by a small machine, very simple in construction, which is affixed to the card. Its use is expected to entirely do away with the necessity for the crushing and carbonizing of the burrs out of the wool.

—The Atlas Foundry Machine Co., Newark, N. J., have removed from Cross and Spring Sts. to their new factory building at Bellville, N. J. In our next issue we shall describe the building and its equipment.

Hurricane Automatic Stock Dryers.

This is a booklet issued by the Philadelphia Drying Machine Co., to illustrate and describe the various styles of raw stock dryers made by them. The construction, operation and capacity of these machines for both drying and carbonizing, are described. The firm will be pleased to send the booklet to any one interested.

Textile Patents.

(Continued from page 403.)

Loom Warp Stop Mechanism. 656,612. W. H. Baker, Central Falls, R. I. and F. E. Kip, Montclair, N. J.

Loom Checking Device. 654,921. O. A. Sawyer, Lowell, Mass., assignor to C. F. Perham, same place.

Loom Shuttle, Box Motion. 654,920. E. L. Sargent, Taunton, Mass., assignor to the Mason Mch. Wks., same place.

Loom for Weaving Double-Piece Figured Velvet. 655,999. A. Thardy, Lyons, France.

Loom Weft Stop Motion. 655,910. E. Oldfield, Norwich, Conn.

Loom Automatic Controlling Mechanism. 655,646. W. H. Baker, Central Falls, R. I., and F. E. Kip, Montclair, N. J.

Loom Warp Stop Motion. 655,644. W. H. Baker, Central Falls, R. I., and F. E. Kip, Montclair, N. J.

Mercerizing Apparatus. 655,546. W. G. Denn, Philadelphia, Penn.

Pile Fabrics, Device for Cutting Double. 655,674. Wm. Fischer, Sr., and Wm. Vogel, Paterson, N. J., assignor by mesne assignments to Wm. Fischer, Sr., Frank Fischer, August Fischer, and Wm. Fischer, Jr., same place.

Pile Fabric Woven. 655,076. O. Hallensleben, Hilden, Gy.

Skein Holder. 656,264. J. Revel, Ellicott City, Md.

Spinning Frame Separator. 656,227. C. E. Tefft, Pawtucket, R. I.

Spinning Frame Ball Bearing Spindle. 654,892. H. H. Ham, New York City, assignor to M. F. Ham, same place.

Spinning Machine. 654,890. A Haenichen, Paterson, N. J.

Spinning Machine. 655,698. T. Eastwood, Walsden, Eng.

Spooling Machine. 655,616, 655,617. Chas. F. Foster, Westfield, Mass., assignor to the Foster Machine Co., same place.

Thread-Tier. 655,571. Jas. W. McCarthy, Ware, Mass.

Tubular Fabric and Constructing Same. 654,694. F. Wilcomb, Pawtucket, R. I., assignor to the Standard Mch. Co., of Pennsylvania.

Washing Fibrous or Loose Material, Machine for. 654,647, 655,717. E. Koppelmann, New York City.

Webs of Fabrics, Machine for Connecting. 656,306. G. K. Rich, Philadelphia, Pa., assignor to the Farr & Bailey Mfg. Co., Camden, N. J.

Wood to Fibre, Mechanism for Reducing. 655,595. J. Askins, Lima, Ohio, assignor to the American Wood Fibre Co., same place.

Wool, Removing Solvent Vapors from. 656,528. E. Donard, Paris, France.

—Among the recent gifts to the Lowell Textile School is one of the latest Crompton & Knowles, 20 harness dobby, 4 by 4 box motion, positive motion, pick and pick; also, one of the latest Harriman Looms with patent shuttle changing device. This gift is particularly gratefully received as Mr. Harriman, the inventor, was formerly a student at the School.

—There has come to our office a combination match box and striker issued from the office of E. G. Siggers, one of the leading patent lawyers of Washington, D. C. It is a household and office necessity, and we are informed that inventors can procure samples of the same by writing him at once. His advertisement appears in this paper.

Air Humidifiers.

Among the plants, which the American Moistening Co., 150 Devonshire St., are to equip with the new system of humidifiers, are the following: The Wamsutta Mills, New Bedford, Mass.; Thomas Henry & Sons, Philadelphia, Pa.; The Crompton Co., Crompton, R. I.; The Portland Cordage Co., Portland, Oregon; The Monaghan Mills, Greenville, S. C.

Repeat orders have been received from Clinton Cotton Mills, Clinton, S. C.; The Newman Cotton Mills, Newman, Ga.; Elmira Knitting Co., Elmira, N. Y.; The Hathaway Mfg. Co., New Bedford, Mass.

—H. S. Vila, importer and dealer in aniline colors, dyestuffs and extracts, has removed to 115 South Second St., Philadelphia, where, with increased stock and more commodious quarters, he is prepared to fill all orders promptly.

Alizarine Products.

Messrs. Sadler & Co., of Middlesborough, Eng., had a very high reputation for alizarine products when they closed their works several years ago. They have recently decided to re-open them, and have notified the trade that they have recommenced the manufacture of alizarines. In the interim, the works have been completely remodeled, new and modern machinery has been installed and they are now prepared to offer their products with every assurance as to their quality and uniformity. Their American agents are Sykes & Street, who are prepared to furnish full information, with dyed and printed samples.

—The Burt Mfg. Co., of Akron, Ohio, have made some important shipments of their Cross Oil Filters on export orders in the past month. These orders come from Denmark, Sweden, Spain, France, England and Mexico. Nothwithstanding the unsettled condition of Europe, their export business is steadily increasing.

—We are indebted to the Blue Book on Rope Transmission for the illustration of the continuous rope drive and also for many of the facts pro and con in relation to the various systems of rope transmission. This little book is a very fair and clear exposition of the subject. It is published by the American Mfg. Co., 63 Wall St., New York. This firm are leading manufacturers of rope for power transmission, and will send the Blue Book on application.

—The second orders that are being received for Smethurst's roving and twist gears are best evidence of their value. The Sterling Mills, Lowell, Mass., have just sent in a second order for 25 more, and Dexter, Richards & Son, Newport, N. H., a second order for 16. The L. S. Watson Mfg. Company are selling agents.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. The Woodstock Cotton Mill has been completed, and the mill is now practically ready for machinery, which is expected to arrive by September.

—*Alabama, Huntsville. A site has been located on the Huntsville Electric Railway on an elevation in Huntsville for the new mill here by Arthur H. Lowe, of the Parkhill Mfg. Co., Fitchburg, Mass. As all the bids rendered by several contractors, were considered excessive, the company will probably do its own building.

—*Alabama, Huntsville. Plans and specifications are now being made for the plant of the Madison Spinning Company, which was recently proposed for this place.

—*Alabama, Jacksonville. Work is to be started in September on the erection of the new buildings for the Ide Cotton Mills, recently incorporated with capital stock of $200,000, with Geo. P. Ide as president and treasurer, and A. B. Sanford, general manager. The mill will be equipped with 10,000 spindles for making colored fancy yarns and bleached silver grays and jaegers. They expect to have the plant ready to begin production about March, 1901.

—*Alabama, Opelika. Work is progressing rapidly on the new Opelika Cotton Mills. It is hoped to have the buildings completed and ready for machinery at an early date.

—*Georgia, Atlanta. The Elizabeth Cotton Mills, F. I. Stone, president, advise us that they expect to begin operations in the latter part of November, with 5000 spindles on hosiery yarns.

—*Georgia, Baldwin. The Baldwin Cotton Mills, which were organized with a $60,000 capital, have elected the following officers: W. A. Sharr, president; P. F. McFurr (Homer, Ga.), vice-president; and W. D. Lewis, secretary. This is to be a 3000-spindle plant., and the contracts for machinery, etc., will be placed shortly.

—*Georgia, Cedartown. Nearly all of the machinery has been installed in the Standard Cotton Mills, of which Messrs. Birbeck & Parker are the managers. The mill is now running with a night and day force to keep up with orders.

—*Georgia, Eastman. The new Eastman Cotton Mill is under construction and work will be pushed rapidly to completion. The machinery has been purchased.

—*Georgia, Gainesville. After legal controversy, the court has decided that the Pacolet Mfg. Co., Pacolet, S. C., has a right to erect new cotton mill near Gainesville, which will be known as the Pacolet Mill No. 4. Work will now go forward.

—*Georgia, LaGrange. The Unity Cotton Mills have now been incorporated with capital stock of $125,000, which is to be increased to $200,000, and C. V. Truitt president and general manager; J. E. Dunson, vice-president, and Fuller E. Callaway, secretary-treasurer. The mill will have an equipment of 10,000 spindles. It has not yet been determined what class of goods will be made.

—*Georgia, Lavonia. The Lavonia Cotton Mills have been organized with M. Crawford as president. The directors are: W. C. Vickery, T. W. McAllister, J. W. Cannon, L. O. Williford and J. F. Tabor. At a preliminary meeting over $25,000 was subscribed toward the project.

—*Georgia, Union Point. Work is now well under way on the construction of the yarn mill for the Union Point Manufacturing Co. It is expected to have the buildings ready for installation of machinery in a short time. This plant will have an equipment of 2500 spindles, as previously reported.

—Massachusetts, Leominster. Francis A. Whitney and others have purchased the Reed Toy plant and are fitting it up with machinery for manufacturing thread, under the name of the United States Thread Co. A. Victorsen, formerly with National Thread Co., is interested and will be selling agent.

—*Mississippi, Centreville. W. J. Jenkins, vice-president of the new Centreville Cotton Mills, recently chartered, advises us that this will be a small mill gotten up on co-operative plan, and that if they are successful, hope to have it in operation in about two years.

—*Mississippi, Winona. Work on the new Winona Cotton Mills' building has been begun. Col. F. Jesty is in charge, and spur track to the mill site has been completed.

—New Jersey, Newark. The Florida Mfg. Co. has been incorporated with a capital stock of $500,000; $150,000 paid in. William Campbell Clark of the Clark Thread Co. is practically the owner, holding all but two shares. The company is incorporated to deal in cotton, cotton yarns, etc. The office is 250 Ogden St., Newark.

—*New Jersey, New Brunswick. Foundation for Johnson & Johnson's new mill was started August 11. F. P. Sheldon is the architect. Equipment will be 8000 spindles and 250 looms. They will manufacture goods for their own use in their large medical supply business. There will be a bleachery. Steam power. J. W. Johnson is treasurer and William H. Ritter is superintendent.

—*New York, Schenectady. Operations have been started in the lace mill, now in the old Brandywine Knitting Mill, of which A. Attenborough is manager. Only the cheaper grade of lace is now being made.

—*North Carolina, Henrietta. Contract for the development of the water power

of Broad River, has been let to Ladshaw & Ladshaw, of Spartanburg, S. C. They have also secured the contract for erection of the cotton mill at this place by a new concern of which R. R. Haynes is president and treasurer.

—North Carolina, Lenoir. The Rhodhiss Mill is to be organized with capital stock of $300,000; George B. Hiss, of Charlotte, president; J. M. Rhodes, of Cherryville, vice-president, and C. J. Rhodes, secretary and treasurer. Location of plant is to be on the Catawba River, not far from Lenoir. Mill will be equipped at start with 10,000 spindles.

—*North Carolina, Morganton. It is expected to have the No. 2 mill of the Alpine Cotton Mills, now under construction, ready to begin operations before Jan. 1st.

—*North Carolina, Raleigh. The machinery is now to be installed in the buildings of the Neuse River Cotton Mills, of which C. G. Latta is president and treasurer. As has been previously mentioned, the mill will have an equipment of 5000 spindles and 150 looms. It is expected to have the plant ready to begin operations before Oct. 1st.

—*North Carolina, Shelby. The Shelby Cotton Mills are ready to begin operations with 3000 spindles and 175 looms, one half of the full equipment proposed. Additional room is available for 4000 spindles.

—*North Carolina, Spring Hope. P. L. Woodward is interested in the project of a $100,000 cotton mill at this place.

—South Carolina, Charleston. At a meeting held July 31 by the stockholders of the Royal Bag Mfg. Co., it was decided to erect a plant for the manufacture of seamless cotton bags. Now they buy cloth. The building will be entirely separate from the Royal Bag Factory. The plant will contain about 5000 spindles and 100 bag looms. The capital stock of the company will be largely increased.

—*South Carolina, Gaffney. The Limestone Cotton Mills have now been chartered with capital stock of $200,000; J. A. Carroll, president.

—*South Carolina, Goldville. The Goldville Mfg. Co., which has been incorporated by J. S. Blalock, L. W. C. Blalock and Mrs. M. E. Browning, will manufacture 26s yarns for lace curtains. The mill will be equipped with 5,000 spindles and operated by steam. Expect to begin operations about December 1st.

—*South Carolina, Hartsville. A site has been selected for the new Hartsville Cotton Mill, recently incorporated by C. C. Twitty and others, with capital stock of $250,000. Work will be started as soon as possible.

—*South Carolina, Hartsville. The Hartsville Cotton Mills, a new incorporation with capital of $250,000, and C. C. Twitty (Spartanburg, S. C.) president and treasurer, will be equipped with 10,000 spindles and 350 looms for making fine print cloths. It is expected to have the plant completed and ready to begin operations about September, 1901. Deering, Milliken & Co., of New York, are to be the selling agents.

—*South Carolina, Honeopath. Building of the Honeapath Cotton Mill Co.'s plant has been postponed until March, 1901. J. A. Brock is president and treasurer of the company and R. E. Ligon, secretary.

—*South Carolina, Lancaster. The new building for the Lancaster Cotton Mills, which recently increased the capital stock to $1,000,000, will be 125 by 360 feet, four stories high. Contract is soon to be let. It is expected to have the new plant which will be equipped with 50,000 spindles, ready to begin operations in about a year.

—*South Carolina, Marion. A new cotton mill, The Ashby, will be erected. Capital stock is $125,000; J. C. Mace and B. R. Mullins are among the incorporators.

—*Texas, Cuero. We are advised that work has not yet been started, but that plans and specifications for the new mill will be ready in 30 days, when bids will be asked for. The building will be 75 by 10[illegible] two stories.

—*Texas, Fort Worth. Efforts are now being made for establishing two mills at this place, instead of the one projected some time ago. A. N. Evans and M. C. Hurley are actively interested in the enterprises. Capitalists of Denison, have proposed taking $10,000 worth or more of stock in a new mill, the balance to be subscribed by others. A committee has been appointed to make investigations regarding cost of machinery, etc., and if reports are favorable, the Board of Trade will assist in organization of a company to erect a $200,000 mill.

Enlargements and Improvements.

—*Alabama, Huntsville. The large addition to the Dallas Cotton Mills plant is nearly completed and will be ready for starting operations in a short while.

—*Connecticut, Baltic. The foundation is nearly in for the whole building of the Baltic Mill. Work is now being started on second story of the weave shed. New machinery is now being set up and water wheels installed in the Baltic Mill, which will soon be ready for operation.

—Connecticut, No. Grosvenordale. An addition 119x56 feet, is under construction for the Grosvenordale Co. The lower part of the building will be used as supply room and the upper story will be taken up in storing away patterns.

—Maryland, Bank. Benjamin Bell, of the Providence Mfg. Co. has purchased Alfred Kershaw & Co.'s mill and will increase the number of looms.

—*Massachusetts, Easthampton. The construction work on the No. 3 mill of the West Boylston Mfg. Company is rapidly nearing completion. An electric lighting plant is to be installed for lighting both No. 2 and No. 3 mills.

—Massachusetts, Fall River. The Stafford Mills expect to have their new weave shed running about October 1. 450 looms of Mason Machine Works are being put in, as well as much other new machinery.

—*Massachusetts, Fiskdale. We have been informed by the Fiskdale mills, that they are simply making changes in

the spinning department, which will give them a larger production and not enlarging the plant, as reported.

—Massachusetts, Newburyport. Alterations and improvements are now being made to the Peabody Manufacturing Co.'s plant at this place. The lower mill is to be used as a yarn mill, while the upper one is to be devoted to weaving. Changes of machinery are necessary.

—Massachusetts, North Adams. The contract has been let by the Windsor Print Works Company for the large addition to their dyehouse. About $8000 will be expended, and work will be begun at once, to be completed about November 1st. It will be at the end of the machine house, two stories high, 80 by 72 feet, and built of brick.

—Massachusetts, Whitinsville. Contract has been let for a large addition to be built to the Uxbridge Cotton Mill, between Uxbridge and Whitinsville.

—*North Carolina, Elizabeth City. The Elizabeth City Cotton Mills, manufacturing cotton yarns, are installing 3500 additional spindles in the plant, which will give them a total of 10,000, when completed.

—*Pennsylvania, Attleboro. In regard to report under Hulmeville relative to an addition now under way for Chas. H. Witty & Co., we make correction, as it should have read for Rumpf Bros., formerly Rumpf Bros. & Witty at Philadelphia. It is the mill at Philadelphia, which is now operated by C. H. Witty & Co. A new dyehouse is being built.

—Rhode Island, Lonsdale. Plans for the addition to the Ann & Hope Mill are nearly ready for bids. The building will be nearly 400 by 100, and a new picker house and engine house will be built. The capacity of the mill will be increased about one-third.

—Rhode Island, Woonsocket. An addition is to be built to the River Spinning Co.'s plant. They will install 5,500 new spindles in the annex, which will be lighted by electricity. Machinery has been ordered.

—*South Carolina, Batesburg. An addition is to be built to the plant of the Middleburg Cotton Mill, of which W. P. Roof, is president. The capacity of the mill will be doubled, when addition is completed.

—*Tennessee, Knoxville. The Brookside Cotton Mills, which we recently reported as building an addition to their plant, are to install 16 looms and 10,000 spindles.

Mills Starting Up.

—*Delaware, Wilmington. Operations have been resumed in the Delaware Cotton Co.'s plant. The idleness was caused by the weavers going on a strike.

—*Georgia, Atlanta. The Piedmont Cotton Mills will begin production in October, with 2500 spindles, making warp yarns, 14-2's. The organization is as follows: Capital, $60,000; president, B. L. Willingham; secretary, O. B. Woestman; treasurer, W. W. White. They will sell direct. Baynard Willingham will be manager.

—*North Carolina, Hickory. Most of the machinery has been installed in the E. L. Shuford Cotton Mills, and it is expected that the plant will commence production in a few weeks.

—*North Carolina, Shelby. Operations were started the 14th inst. in the Shelby Cotton Mills, with 3000 spindles and 175 looms.

—South Carolina, Columbia. It is expected now that the Olympia Cotton Mills, together with power plant, will be completed about October 1.

—*Tennessee, Knoxville. The Knoxville Cotton Mill, now in process of construction, is expected to begin production about October 1st.

Woolen.

New Mills.

—*California, Sunolglen. C. L. Torr, who is rebuilding his woolen mill, informs us that he expects to have the plant in operation late in the fall. Mill will have 4 sets cards and 20 looms, for making flannels, blankets and lap robes.

—Massachusetts, Unionville. John Hepler, formerly at Quinapoxet, but who was obliged to discontinue the business, is now operating a shoddy mill at this place on a small scale.

—Massachusetts, Webster. L. D. Perry, manufacturing yarns at Perryville, is to erect a new yarn mill at Webster, which wil furnish employment for about 100 hands. A building, 120 by 100 feet, 2 stories high, will be erected. Woolen yarns will be manufactured. It is expected to have the new mill in operation by the first of January, 1901.

—*New Jersey, Gloucester City. Work on construction of the building for the Fries-Harley Rug Co. is progressing rapidly. This is the new rug factory reported early in the month.

—*New York, Binghamton. Machinery is now being installed in the new felt mill of the Binghamton Felting Company, recently incorporated with a capital of $100,000. It is reported that the mill will probably be ready to start operations in about a month.

—Pennsylvania, Philadelphia. A new concern known as Rosenheim Bros. & Co., has been put in operation at 62d St. and Girard Ave., manufacturing upholstery piece goods, curtains, etc. The mill will have an equipment of 18 looms, when in full operation. Sidney T. Rosenheim, Milton T. Rosenheim, Joseph E. Whiteley and John Collier are the members of the firm.

—South Carolina, Columbia. The Mutual Carpet Co. is the name of a new concern with a capital of $15,000, which intends to fit up a building for the manufacture of rugs and carpets on a small scale.

—*Virginia, Winchester. It is announced that another branch mill of the Crawford Woolen Co., Martinsburg, W. Va., will be built here. It will probably be operated as a separate company, which will soon be organized and a building erected.

This matter was decided at a conference between S. H. Hansbrough of Winchester and W. H. Crawford. The matter was rumored last June.

Enlargements and Improvements.

—*Georgia, Atlanta. The Atlanta Woolen Mills have just completed addition to plant, consisting of building and machinery, as reported in issue of April 6th.

—*Indiana, Mishawaka. Preparations are now being made to start work on erection of additional buildings for the Mishawaka Woolen Mfg. Co.

—Maine, Springvale. A new dye house is to be erected for the Springvale Woolen Co.

—*Maine, Warren. Twenty of the looms in the Georges River Mills are to be replaced with new ones of the Knowles pattern. A large power house is to be erected and work has already been started on foundation. At an annual meeting of the company, Charles W. Parker was re-elected president, Edward A. Hatch, treasurer, and Geo. W. Walker, superintendent.

—Massachusetts, East Dedham. Work is progressing on the erection of the weaving mill for the Cochrane Manufacturing Co. The building is 148 by 68 feet, two stories, brick and wood.

—Massachusetts, Franklin. The American Woolen Company, operating the Rays Woolen Mills, inform us that the mill is running full time and the report of operations having ceased is without foundation. They are building a new finishing room, 45 by 60 feet, three stories high, but this does not interfere with the operating of the plant.

—*Massachusetts, Middleboro. An addition is now under construction to the Star Mill, recently purchased by the Farwell Worsted Company, of Central Falls, R. I. About 80 looms are now in operation in the plant.

—Massachusetts, Pittsfield. A new dye house, 40 by 34 feet, is to be erected for the Pontoosuc Woolen Company. For the present, it will be used for drug and chemical storage.

—Oregon, Union. New machinery to the amount of about $4000 has been ordered for the Union Woolen Mills, which will considerably increase the output of the mill, and an electric light plant will be added a little later, for lighting the factory. This mill has just started up after a short shut-down.

—Pennsylvania, Philadelphia. The entire scouring and carbonizing plant of John Lunn, on Boston Ave., has been moved to 3rd, and Erie Ave., Camden, N. J., where he will have larger quarters. Some new machinery will be installed. Expects to be ready to resume operations about Aug. 15th.

—Pennsylvania, Philadelphia. Thomas Henry & Sons are expending abotu $27,000 for additions and improvements to their plant, which will consist of a fourth story 48 by 130 feet; storage sheds, one story, 44 by 196 feet; and boiler house addition, 10 by 38 feet; three story and basement addition, 45 by 36 feet; and office addition 12 by 17 feet.

—*Pennsylvania, Reading. The new weave shed, 36x118 feet, has recently been completed for Louis Kraemer & Co. New addition is to be equipped with 30 looms.

—Rhode Island, Greenville. The Greenville Woolen Mills are closed indefinitely. Many needed improvements are being made to the plant, during the shut down.

—Rhode Island, Olneyville. The stock house of the National & Providence Mills of the American Woolen Co. is being fitted up with machinery and will be known as Mill No. 8. About 100 looms will be put in.

—Tennessee, Knoxville. The Knoxville Woolen Mills Co. is making extensive enlargments and improvements to the plant; 5,000 more spindles are to be installed in the cotton spinning department, giving the plant a total of 10,000 cotton spindles when addition is completed. About $75,000 will be expended.

—*West Virginia, Charleston. The Kanawha Woolen Mills confirm our report of enlargement of their plant, and say that they contmplate replacing all carding and spinning by new machinery.

Mills Starting Up.

—Maine, Camden. The Camden Woolen Mills, which have been shut down while necessary repairs were made to the plant, expect to start up soon.

—Maine, Gardiner. The Gardiner Woolen Mills, which have been shut down for a short time, have been started up again

—Maine, North Vassalboro. The American Woolen Co.'s mill, at this place, which has been closed for some time, has been started again.

—*Massachusetts, Clinton. Work has been resumed in the spinning departments of the Bigelow Carpet Co.

—*Massachusetts, Lawrence. Operations are resumed in the Washington Mills, which have been shut down for four weeks.

—*Massachusetts, Pittsfield. Part of the spinning room of the Taconic Mill has been put in operation. Work is now going on in all departments except the finishing room, which will not start until more looms are running.

—*New York, Oswego. Work has again started in the Mohawk Mfg. Co.'s plant, and many of the looms are now running.

—*Rhode Island, Greenville. Operations have been resumed in the Greenville Woolen Mills.

—Rhode Island, Harrisville. Operations have been resumed in the American Woolen Company's mill at this place, after a shut down of three weeks.

—Rhode Island, Pascoag. Operations have been resumed in the Sheffield Worsted Mill of the American Woolen Company, after an idleness of three weeks.

—*Rhode Island, Wickford. Operations have been resumed in the Oak Hill Mill and Wickford Worsted Mills, of which William Gregory is proprietor.

—*Rhode Island, Woonsocket. The Perseverance Worsted Co.'s plant, which has been shut down, has resumed operations.

—Virginia, Buena Vista. The Buena Vista Woolen Mills have resumed operations, after a protracted idleness.

Knit.

New Mills.

—*Alabama, Birmingham. Louis H. Mason has plans in view looking toward the manufacture of ladies' and men's underwear, about 300 to 500 dozen daily, (?) and will make yarn as well. He wants all information he can get as to cost of machinery, including spinning, dyeing and knitting.

—*Georgia, Cedartown. The Josephine Mills, recently incorporated by Paul D. Baugh and others, with capital stock of $100,000, will manufacture ladies' bleached cotton underwear, light weights. The mill, which they contemplate having ready to begin production about Jan. 1st, 1901, will be equipped with 2600 cotton spindles and 26 knitting machines.

—*Georgia, Eastman. A company has been organized here with capital stock of $10,000, N. Wynne, president and Park Hooper, secretary, to erect a knitting mill. The full amount has been subscribed and work will be started at once on building.

—Georgia, Waycross. W. B. Haight and Geo. T. Woodin, have been looking at locations in this place, with a view to establishing a knitting mill here. A proposition has been made to the town, that they will take $10,000 worth of stock, provided the balance of $30,000 is raised by the citizens. The Chamber of Commerce is now considering the matter.

—*Georgia, Winder. The knitting mill which we recently reported would be established here will be known as the Winder Knitting Mill. A company has been formed and work commenced on the foundation.

—*Georgia, Wrightsville. A knitting mill for making ladies' underwear and hosiery, is to be established here by T. J. Arline, who is now receiving estmiates, etc., on necessary machinery. This project was mentioned early last year, but was not carried through.

—*Kentucky, Paducah. The Alden Knitting Mills Co., recently organized at this place, by F. L. Scott, R. B. Phillips, Geo. C. Wallace and others, with capital of $40,000, expect to begin operations about November 1st., making ladies' hose and half hose. This is the concern which has secured the removal of the Alden Knitting Mills, at New Orleans, La., to this place, where new organization has taken place.

—*Mississippi, Columbus. John D. Askew, who was reported last April as contemplating the erection of a knitting mill and who stated at that time that he was not fully decided in the matter, now thinks he will go ahead with the project and start a plant to cost about $30,000.

—*New York, Johnstown. Bids have been received and opened for the erection of the new knitting mill at this place for the Diana Knitting Company. The new building will cost over $20,000.

—*Ohio, Piqua. The project of erecting a knitting mill at Lima, Ohio, by Mr. J. M. Cahill has been abandoned, and instead will erect a new mill at this place. A company has been formed, known as Cahill, Leonard & Co. Plans for building call for brick structure, three stories high, with basement and engine and boiler room. It is expected to have the mill ready to begin production of goods about October 1st.

—*Pennsylvania, Bristol. The Way & Lowe Knitting Mills Company, recently incorporated at Camden, N. J., has secured the old Lewis Jones mill property here, and will manufacture men's underwear. W. B. Lowe is president; Pennington Way, vice-president, and Marion S. Acee, secretary and treasurer.

—*Pennsylvania, Port Carbon. George W. Heebner & Son advise us that their new knitting mill will start September 1st, on ladies' knit underwear, with six machines, which will be located in a vacant store building owned by one of the firm, and if the venture proves successful, will be extended as circumstances warrant.

—*Pennsylvania, Wilkes Barre. Morgan & Menzies are now rebuilding their knitting plant, which was recently destroyed by fire. The dyeing plant is located at Lee Park, where the product is to be finished.

—*Tennessee, Chattanooga. The new Ocoee Hosiery Mills will make white foot hose and half hose, 176 needles, seamless, and will install 50 machines. There will be a dye house. They expect to get into production about October 15. Capital, $25,000. G. Andrews, Jr., president and treasurer; A. B. Andrews, manager. They will sell direct. The officers of the company are also connected with the Richmond Hosiery Mills at Rossville, Ga., nearby.

—Tennessee, Chattanooga. The Chicamauga Knitting Mills have been organized at this place, with a capital stock of $25,000, for the manufacture of ladies' ribbed underwear. A building will be erected, 50 by 100 feet, one story, brick. All of the machinery has been purchased, and about 75 operatives will be employed. The daily output will be about 300 dozen garments. The incorporators are B. A. Stockard, E. B. Thomasson, W. E. Birchmore, J. H. McReynolds and J. A. Patten.

—Tennessee, Knoxville. It is reported that J. T. Brownlee and others are interested in the establishment of a knitting mill for manufacturing underwear at this place. Company, which is soon to be organized, will have a capital stock of about $40,000. Site will be purchased and work started on erection of buildings as soon as possible.

—*Texas, Denison. Work on the Gate City Hosiery Mills has been somewhat delayed, on account of lack of material. The same has now been received, and the work is expected to go on without further interruption.

—*Virginia, Newport News. Operations have been started in the branch mill established here by A. H. & W. E. Cobb, of Suffolk, Va. Two machines have been installed and are being operated to their capacity. Other machines are expected to arrive soon and as fast as the demand requires, other machines will be added.

—*Virginia, Williamsburg. It is expected to have the plant of the Williamsburg Knitting Mill, of which L. W. Lane, Jr., is president, and A. W. Chapin, superintendent, in operation by November 1st., manufacturing fleece-lined underwear as previously reported.

Enlargements and Improvements

—*Illinois, Rockford. The plant of the Burson Knitting Co. is to be enlarged by the addition of two stories to the present building. The lower floor is to be used as office, shipping and store room, while the second floor will be filled with knitting machines.

—*Iowa, Des Moines. Work has been completed on the alterations to the property recently acquired by the Iowa Knitting Co., and it is expected that the factory will be removed to the new quarters about Sept. 1st. Failure of shipping the dyeing plant in time, has caused delay in moving.

—*Massachusetts, Ipswich. The new story on the dye house of the Ipswich Mills has been completed. Foundation for the new building is also in and building will be completed in a short time.

—New York, Fort Plain. The Cayadutta Knitting Mills have purchased the machinery and leased the mill building of Henry Payne, at Sammonsville.

—New York, Gloversville. The Board of Trade has accepted the proposition of the Gloversville Knitting Company for the enlargement of their plant, and it is expected that plans for the same will soon be made.

—*New York, Little Falls. Work is progressing rapidly on the buildings of the new plant under construction at this place for Robt. MacKinnon. Work will now be started on foundations for the engines and boilers. It is reported that Mr. MacKinnon also contemplates erecting a large storehouse next year, for storing raw material.

—*New York, Poughkeepsie. Foundation for the addition to C. F. Hoag's mill was started August 21. He makes sweaters, caps and a general line of fancy knit goods, and will install eight new machines, making total of 90.

—*New York, Utica. The new addition for the Oneita Knitting Mills Co., will have an equipment of 15,000 spindles, instead of 1500 as previously reported. They contemplate having the plant ready for production of goods, April 1st, 1901. Electricity will be the power used.

—New York, Utica. The new addition to the Utica Knitting Co.'s plant will be used entirely for carding and spinning. Carding machinery occupies more than half the space on the first floor; while twelve pairs of mules are in operation on the third floor, where two more pairs will be added. The second floor is not in use at present, but they contemplate installing twelve pairs of mules by the first of September.

—Pennsylvania, Danville. The Danville Knitting Mills are about to install 59 new machines in their plant, which will give employment to 50 additional hands. (Machinery bought).

—*Pennsylvania, Leesport. Miller & Balthasar inform us that they will move their plant in to the building recently purchased, about the 15th of August. They manufacture 160 needle fine gauge half hose and will install 12 new machines in the plant.

—Pennsylvania, Philadelphia. An addition is to be built to Thomas Buck & Co.'s dyehouse, at Jasper Street and Boston Avenue.

—Pennsylvania, Plymouth. Twelve new hosiery knitting machines have recently been installed in the Pioneer Knitting Mills, of which Ambrose West, is proprietor. A new 250 h. p. boiler, a larger dynamo and a new oxidizing room has also been installed.

—*Rhode Island, Woonsocket. Contract has been awarded for erection of an addition, 35x55 feet, to the Bartlett Mill, now occupied by the Woonsocket Knitting Company.

—*South Carolina, Orangeburg. The report of project now afoot at this place for erection of a new knitting mill is the Orangeburg Knitting Mill, formerly at Bamberg, S. C., now operating a plant of 20 machines on cotton hose, which is to double the capacity of their plant. They are in the market for various requisites for the enlargement. B. H. Moss is president of the concern and J. L. Weeks, treasurer.

—*Virginia, Norfolk. The Virginia Hosiery Mills, now operating 100 machines, contemplate having 75 more in operation by the first of September. The daily output of the plant is between 500 and 600 dozen a day. This is a new plant, which has only recently been started.

Mills Starting Up.

—New York, Amsterdam. The Clermont Knitting Mill, which has been idle for some time, has now been leased by Charles F. Salisbury, formerly of this place, but who started a branch mill at Northville. The new plant will be operated in connection with the mill now run by H. K. Salisbury & Son, of this place.

—*New York, Middleville. Operations have been resumed in the Nelson Knitting Mill, which was closed during June, owing to fire in the plant. As a great many of the operatives have secured employment elsewhere, the mill, which was previous to the fire operated day and night, will now be run with only a day force.

—North Carolina, Greenville. The new Greenville Knitting Mills have been completed, and will start up early in September, as planned.

—*Pennsylvania, Gordon. The Gordon Knitting Mill, William E. Johnson, proprietor, is now running, giving employment to about 40 people, which number is to be increased as soon as additional machinery is installed.

—*Pennsylvania, Troy. Operations have been started in the Troy Knitting Co.'s plant, recently rebuilt. The number of operatives, now numbering about fifty, is to be increased in a short time to over one hundred.

Mills Shutting Down.

—Massachusetts, Stoughton. We understand that French & Ward's mills are closed down after Sept. 1st for an indefinite period, until business improves.

—Pennsylvania, Elizabethville. The Elizabeth Hosiery Mills advise us that they expect to sell out their business early in September.

Silk.

New Mills.

—*Massachusetts, Milford. Work is now progressing on the Magid-Hope Silk Co.'s plant, and it is expected that some of the machinery will be put in operation at an early date.

—New Jersey, Paterson. Part of the Adams Silk Mill has been leased by H. R. Ackerman, who will operate a throwing plant.

—New York, Rome. J. Charles Hale has leased the lower part of the Aaland Blower Works, to New York parties, who are refitting the building for manufacturing silk wire, such as is used in electrical purposes and by milliners.

—Pennsylvania, Freemansburg. P. A. Young, proprietor of the silk mill at Walnutport, proposes erecting a mill at this place, which will give employment to about 40 people. The $5,000 asked for, to be raised by the citizens, seems assured.

—Pennsylvania, Hazleton. A new silk mill is contemplated for this place. Max Bayerle and W. H. Wylie, interested in the Monopole Weaving Co., at Wyoming, R. I., are interested in erecting a new mill here, and removing their plant to this place, if satisfactory arrangements can be made.

—Pennsylvania, Meadville. It is reported that the Banner Silk Company, of Paterson, N. J., will establish a branch mill at this place.

—Pennsylvania, Tamaqua. Stehli & Co., silk manufacturers of Switzerland, who already have interests in American silk mills in this country, are now reported as about to locate a large throwing plant at this place.

—*Pennsylvania, York. Work on the foundation of the Diamond Silk Co.'s new plant is being pushed. Contract has been let for the superstructure, which will be completed as soon as possible.

—*Pennsylvania, White Haven. The White Haven Silk Co., which has been incorporated with Frank Frigerio as president and superintendent, and Peter Magagna, treasurer, expects to have the new plant, now under construction, in operation by October. Silk throwing, organizine, Grenadine and Crepe de Chine twist will be made a specialty. When in full operation the mill will have 9500 spindles, operated by water power. They are still in the market for various parts of the machinery, equipment and supplies.

Enlargements and Improvements.

—*Connecticut, Middletown. It is expected that the new factory for the Portland Silk Company will be ready to begin operations this week.

—*Connecticut, Stonington. A third addition, which is to be two stories, is to be built to the north end of the American Velvet Co.'s mill. Contract for building has been awarded to Peck & McWilliams.

—*Maine, Westbrook. The Haskell Silk Company's plant, which is nearly completed, will give employment to about 275 hands. Fifty new looms have been ordered, which will make a total of 200, and more than double the present capacity of the mill.

—New York, Oneonta. The Paragon Silk Company is to install 60 additional looms in the plant.

—New York, Rochester. Weldon & Taylor contemplate adding one floor to their plant and manufacture window-shade fringe.

—*Pennsylvania, York. The capital stock ($100,000) of the York Silk Mill, has been transferred to a syndicate composed of D. F. LaFean, W. S. Bond, C. H. Emig, C. H. Dempwolf and M. G. Collins. The capital stock will be increased to $200,000 and the present capacity doubled.

Mills Starting Up.

—Pennsylvania, S. Bethlehem. The silk mill of George W. Grube is now completed, and work was commenced on August 27th, employing about 20 operatives. More hands will be required as the remainder of the machinery is added.

Miscellaneous.

New Mills.

—*Georgia, Augusta. Ground has been broken for the new bleachery to be erected by the Clear Water Bleaching & Manufacturing Co.

—Indiana, New Albany. The Hoosier Dye Works & Finishing Co. will establish a new plant for dyeing and finishing cotton goods on East Third St. Charles W. McCord and Allen Wright are the interested parties, and it is the intention to have the plant ready to start up the latter part of September.

—Massachusetts, Lowell. Machinery is now being installed in the old Kendall Mill on Lawrence Street, for a new concern, which will operate it under the name of The Waterhead Mills. This is a company which will manufacture and dye; for the present corduroy cloth or velvet. Later they contemplate making cotton goods. Hochmear Bros. of New York are interested in the enterprise.

—*Massachusetts, Millis. The National Flax Fibre Company, which in a previous issue, we reported contemplated starting operations in their new plant about August 1st, now expect to have it running by the 1st of September. Full report of equipment, etc., in issue of July 9th.

—Pennsylvania, Allentown. The Acme Bleaching Co. is a new concern recently started at 14 So. Church St., for bleaching and dyeing all kinds of knit goods in the piece.

Enlargements and Improvements.

—Georgia, West Point. A new two-story building, 192x67 feet, is to be erect-

ed for the Lanett Bleachery. The need of more room and the additional facilities have necessitated erection of addition.

—*Kentucky, Covington. The Overman & Schrader Cordage Co., which has recently doubled the capacity of the plant and occupies the large building at Cincinnati, has increased the capital stock from $100,000 to $200,000.

—*Massachusetts, Ludlow. The new mill building of the Ludlow Manufacturing Company is nearly completed. The main building is 433 by 28 feet, with a wing 147 by 69 feet. Steam will be used for heating, and electricity for lighting.

—New Jersey, Newark. A cloth sponging establishment is now being erected at this place by Mrs. L. Wirtz. The building is to be 40x80 feet.

—New York, Utica. Work has been started on erection of a brick building, 22 by 50 feet, two stories high, to be used as an annex to John M. McLean's dyeing establishment. The ground floor will be used as a dye shop and for cleaning, while the second will be for the finishing rooms, steam cylinders and pressing room. New machinery, including a boiler and engine, will be installed.

—*Pennsylvania, Yardley. An enlargement 50x80 feet is to be made to the plant of the Cold Spring Bleaching & Finishing Works, now under construction at this place.

—*Rhode Island, Slatersville. The new bleachery at this place in which James S. Hooper and D. N. Savory are interested, will be incorporated as the Slatersville Finishing Company.

—*Wisconsin, Milwaukee. Further information regarding the new plant to be erected by the Otto Pietsch Dye Works, dyers and cleansers of wearing and household goods, dress goods, yarns, etc., for merchants, is that the main building will be 40x100 feet, four stories high, with cleaning and dye house in the rear, 20x40, two stories high. Basement to be used as dye house, first floor as store and offices and the top rooms for finishing and drying.

Mills Starting Up.

—Massachusetts, Fall River. The Algonquin Print Works have started up again after a shutdown of five weeks.

—*Rhode Island, Riverpoint. Operations have been resumed in the Clyde Print Works, which were recently shut down, to allow for making alterations and repairs to the plant.

Fires.

—Massachusetts, Lowell. The buildings formerly used by the Merrimac Woolen Company, A. Fels, agent, as piece dyehouse, twisting room and drying room, were damaged by fire recently. Loss is estimated to be more than $5000; covered by insurance.

—Michigan, Niles. The Lakeside Knitting Works, whose main mill is at Michigan City, Ind., has been destroyed by fire, with a loss of about $3000; insured for $1000. This was a branch plant recently started here, giving employment to about 65 people.

—New York, New York. A disastrous fire occurred on August 25th in the building located at 48-50 Wooster Street, occupied by Birkenfeld, Staruss & Co., underwear and hosiery manufacturers, and J. Kridel Sons & Co., silk goods manufacturers. The loss on building and contents is estimated to be about $200,000, the damage being mostly confined to the stock, by water.

—New York, Waterford. The Clyde Knitting Co.'s mill was partially destroyed by fire recently. Plant was insured for about $75,000.

—Pennsylvania, Philadelphia. The building and contents of the Southwark Woolen Mills, at Eighth and Tasker Sts., were recently damaged by fire in the finishing room, to the extent of $10,000.

—Quebec, Montreal. $50,000 damage by fire was done to the St. Ann Cotton Mill of the Dominion Cotton Co.

—Texas, Barker. The Meadow Brook Cotton Mills, which were in course of erection, have been burned, as well as storehouse containing machinery, which had been shipped from the North and was awaiting installation. The property was insured for about $50,000. It is not yet known whether the project will be carried through or abandoned.

Failures and Suspensions.

—*Connecticut, Norwalk. The firm of J. H. Buckley & Son, manufacturers of elastic webbinb, have filed a petition for bankruptcy. A meeting of creditors was held on the 28th.

—New Jersey, Paterson. The firm of Gallant Brothers, silk manufacturers, with mills at this place and Delhi, N. Y., which have been closed, have gone into bankruptcy. The liabilities are estimated at about $436,000, and assets $387,000. A trustee is to be appointed, after which settlements will be made with the creditors.

—South Carolina, Yorkville. T. B. McClain, owner of the Sutro Cotton Mill, has made an assignment for the benefit of his creditors. Assets are reported to be estimated at about $80,000, including real estate, cotton mill building and machinery, with liabilities of $65,000. The Loan and Savings Bank of this place is involved for $21,000 and is unsecured, except to the extent of $9,000. The mill was equipped with second hand machinery.

Facts and Gossip.

—Connecticut, Newington. The knitting factory for many years operated by John Chapman, is now in possession of Captain C. W. Crane, who will manufacture cardigan jackets, gloves, hosiery, sweaters and a line of silk goods in underwear, etc. W. H. Bacon will be superintendent.

—Georgia, Eatonton. A charter has been applied for by the Putnam County Mfg. Company, for reorganization, and the stockholders have been requested to deposit their certificates of stock with one of the Eatonton banks before October 15th. When the charter for the new

company is received, certificates of stock will be issued pro rata to the present stockholders who deposit their certificates.

—*Georgia, Griffin. We learn that the carpet factory project at this place has no substantial foundation, and is not likely to materialize.

—*Georgia, Statesboro. It is now reported that the project of organizing a company to build a cotton mill here, will be carried through. This was mentioned about a year ago, with D. R. Groover as interested.

—Georgia, Washington. R. A. Almond is now the sole owner of the knitting mill recently organized here, having purchased the interest of J. R. Dyson.

—Maine, Bridgton. The Forest & Pondicherry Mills have started their plants with a night force.

—Maine, Camden. At the annual meeting of the Camden Woolen Co., J. H. Montgomery was re-elected president and Geo. W. Taylor, superintendent. Wm. Eaton was chosen director to succeed W. R. Gill, resigned, and W. P. Gould as Mr. Gill's successor as treasurer.

—Maine, Kittery. The Bell Manufacturing Company has been organized at this place with a capital stock of $50,000, by Charles B. Basford (Malden), J. Curtis Kimball (Boston) and F. E. Rowell (Kittery). They propose manufacturing and selling waterproof linen goods.

—Massachusetts, Canton Junction. The Union Bleaching & Finishing Co. has filed articles of incorporation under the laws of New Hampshire. Capital stock, $150,000. The incorporators are J. W. Beals, Jr., of Boston; W. J. Wilson, of Cambridge; F. G. Bufford, Winchester; John A. Adams, Newton. This is the reorganization of the plant of the Canton Bleachery, which has been in hands of receivers for some time.

—*Massachusetts, Lowell. The buildings of the Talbot Dyewood and Chemical Co., which were destroyed by fire recently, are being rebuilt.

—*Massachusetts, Lowell. It is reported that the buildings of the Merrimac Woolen Co., at Dracut, which were recently destroyed by fire, will be rebuilt.

—Massachusetts, Needham. The firm of Wye Bros. & Company, manufacturers of knit goods, has been dissolved by mutual consent. The business will be carried on under the name of George E. Wye & Co., Wm. H. Wye retiring.

—*Massachusetts, Oakdale. We have been informed by the L. M. Harris Manufacturing Co., reported in a previous issue as to discontinue mill at Oakdale, that they propose selling the machinery and going out of the cotton manufacturing business.

—*Massachusetts, Pittsfield. S. N. & C. Russell Mfg. Co.'s plant is again running on full time. The new machinery recently added will be started as soon as the shafting has been hung.

—Massachusetts, Pittsfield. The machinery in the new addition to the Pontoosuc Mill is now in operation with a night and day force, to furnish sufficient stock to keep looms in steady operation.

—New Jersey, Camden. The Fries-Harley Company has been incorporated with capital stock of $200,000 by Frederick Fries, Henry M. Harley and William J. Thompson, of Gloucester City.

—New Jersey, Camden. The Davis Woolen Company has been incorporated with capital stock of $75,000.

—New Jersey, Camden. The Pennypack Yarn Finishing Company has been incorporated with capital stock of $100,000 by E. E. Forrest, J. C. Forrest and Geo. H. B. Martin.

—New Jersey, Lambertville. The hosiery mill, which we reported would be established at this place will, we are informed, not materialize. The help which was being trained preferred picnics to work, and the machinery was moved back to Philadelphia.

—*New Jersey, Paterson. As some of the New York creditors of James E. Daly, who failed a short time ago, were unwilling to accept offers of compromise as previously reported, he has been adjudged a bankrupt. A meeting of the creditors will probably be held early this month.

—New Jersey, Paterson. Westerhoff Bros. & Napier Co. has now been incorporated with capital stock of $100,000.

—New York, Albany. The Capital Underwear Company has been incorporated to manufacture ladies' and children's garments. Capital stock is $10,000. W. E. Kelly, 21 Union St., Albany; J. P. O'Brien, Troy, and W. D. O'Brien, 264 Eighth Street, Troy, are the directors.

—New York, Brooklyn. The F. W. Kummerle Silk Mill has been incorporated with a capital of $90,000 and will continue the business of Frank W. Kummerle, in the manufacture of silk ribbons. Among the directors are: Frank W. Kummerle, August L. Kaiser and Frederick C. Knehule.

—*New York, College Point. The Rhenania Mills inform us that the report concerning restarting of the mill by Newark parties, is without foundation.

—New York, Geneva. E. P. Cowell, of Philadelphia, is now conferring with the Board of Trade, relative to establishing a large silk plant at this place. As a bonus, $100,000 of preferred stock, guaranteeing an 8 per cent. dividend, is to be raised in Geneva. If the matter should be favorably received, a building, 100 by 200 feet, two stories high, would be essential for the same.

—New York, Oneonta. The machinery in the Oneonta Knitting Mills, formerly operated by E. E. Scatchard, has been sold to W. P. Morgan, proprietor of the Lee Park Mill, Wilkesbarre, Pa., and will be at once removed to that city.

—New York, Syracuse. It is reported that Duffy Bros.' silk mill at Port Jervis is to be removed to this place.

—*New York, Waterford. The Clyde Knitting Co., whose mill was recently destroyed by fire, has not yet decided as to rebuilding of the plant.

—North Carolina, Charlotte. It is re-

ported that owing to the high price of cotton, that a number of the cotton mills will close for several weeks, or until the new cotton crop begins to move freely. Several mills, having China for a market, have already changed the grade of their output owing to trouble now at that port.

—North Carolina, Raleigh. It is reported that a new silk mill is to be erected here by New York capitalists.

—North Carolina, Washington. John W. Mayo is now corresponding with builders of knitting machinery, relative to establishing a mill at this place.

—*North Carolina, Zirconia. We have been informed by R. M. Oates, that the report of purchase of property was merely as an investment and that the fact of the ones mentioned being in the cotton mill business for sometime gave rise to the rumor that another cotton mill would be erected there. They have not yet decided when the power will be developed and utilized, but state that nothing will be done during 1900.

—*Ohio, Springfield. It is now reported that a Paterson manufacturer is corresponding with President Schaus of the Commercial Club, relative to establishing his silk plant at this place. He desires subscriptions of the capital stock amounting to about $20,000, raised at this place, with privilege of purchasing the stock as soon as the mill is in good running order.

—Ontario, Toronto. The Western Woolen Mills Co., Ltd., has been incorporated with capital stock of $125,000.

—*Oregon, Oregon City. Regarding previous report of Messrs. Jacobs' interests being purchased by other parties, we have been informed that this has not been done, the interested parties of the Oregon City Mfg. Co. being the same as heretofore. At the annual meeting of the stockholders, held recently, Adolph R. Jacobs was elected president; A. L. Maxwell, vice-president, and Wm. Smith, secretary.

—*Oregon, Portland. Messrs. Carter & Walker, owners of the Dallas Woolen Mills, now known as the Pioneer Woolen Mills Co., propose removing the mills to Portland, if they are offered a good river site. If they decide to remove to Portland, a scouring mill will be added to the plant.

—Pennsylvania, Avon. The Avon Knitting Company will be reorganized under the name of the Lebanon Textile Company, and start up October 1st. The incorporators are Stephen A. Light, Samuel L. Light, W. S. Davis, and others.

—Pennsylvania, Chester. J. Wm. Lewis & Co. are reported to be running out stock and to close the plant. It is said that Mr. Lewis will not start manufacturing again.

—Pennsylvania, Denver. J. H. Gerhart has leased a building and equipped the same with the latest machinery for manufacturing all kinds of hosiery. Employment will be given to about twenty-five people.

—Pennsylvania, East Stroudsburg. Thomas Henry, a hosiery manufacturer of Philadelphia, has made two propositions to the stockholders of the East Stroudsburg Knitting Mill, with a view to securing the plant. One is to form a stock company, and the other is to buy the building outright. Messrs. T. Y. Hoffman and Milton Yetter have been appointed a committee to submit to Mr. Henry two plans of the stockholders, not yet made public. Nearly all of the necessary help required to operate the mill will be brought here, if he decides to take the plant, as the business of the concern will not warrant the taking in of new hands.

—Pennsylvania, Philadelphia. The Perseverance Mill, at Trenton and Auburn Streets, formerly operated by James Wright & Sons, has been closed. This step has been taken as the outcome of family differences since Mr. James Wright's decease a few years ago.

—Pennsylvania, Philadelphia. It is reported the Oriental Knitting & Manufacturing Company, Howard and Palmer Sts., will now manufacture millinery trimming, brush skirt binding and upholstery guimp.

—Pennsylvania, Philadelphia. The Penn Worsted Company has been incorporated with capital stock of $20,000 by William Messemer, H. Rudolph Sach and Edgar B .Moore.

—Pennsylvania, Philadelphia. The partnership of Keefer & Coon, operating the Oxford Carpet Mills, has been dissolved, the business to be carried on by Wm. B. Keefer.

—Pennsylvania, Philadelphia. The ingrain carpet mills are now being operated only five days a week, work being suspended on Saturdays.

—*Pennsylvania, Phoenixville. The Perseverance Knitting Company and the Davis Company, which we previously reported consolidated under name of the Davis Company, should be The Perseverance Knitting Co., Ltd.

—Pennsylvania, Reading. The knitting mills in this vicinity are very busy and cannot get as much help as they want. Some of them would run overtime if they could get help enough.

—Pennsylvania, Scranton. A charter has been granted to the Lourier Sons Silk Co. Capital, $25,000.

—Pennsylvania, Shenandoah. Negotiations are now being carried on with A. T. McAllister and Messrs. Willets and Bartels, of New York, relative to establishing a silk mill at this place.

—*Pennsylvania, Wilkesbarre. The machinery of the Oneonta Knitting Mill, of the E. E. Scatchard Estate at Oneonta, N. Y., has been purchased by W. P. Morgan, proprietor of the Lee Park Knitting Mills, at this place.

—Pennsylvania, York. Subscriptions to the amount of $75,000, of the proposed $100,000, have been raised by Henry Musser, formerly of the York Silk Mill, and others, for the establishment of a silk mill at the West End, to be known as the Monarch Silk Co. A site of sufficient proportions to accommodate a three-story mill has been bought for this enterprise. Its capacity will be 150 looms.

—Tennessee, Roddy. It is reported that O. R. Carver of this place is corresponding with manufacturers of knitting machinery, relative to establishing a plant here.

PERSONAL RECORD.

Cotton.

—James A. Burke, late overseer of frame spinning, spooling and warping for the Border City Mfg. Co., Fall River, Mass., has been appointed superintendent of the Sagamore Mfg. Co., this city, succeeding the late George Whittaker.

—A. L. Bain, formerly superintendent of the Ossipee Cotton Mills, Elon College, N. C., has commenced his new duties as superintendent of the Delgado Cotton Mills, Wilmington, N. C.

—R. L. Boatner, formerly boss carder at the Aragon Cotton Mills, Aragon, Ga., is now in a similar capacity with the Withan Cotton Mills, Hartwell, Ga.

—W. H. Connor, formerly at Sherburne, N. Y., is now overseer of spinning at the Vesta Mills, Charleston, S. C.

—J. H. Creekmore has recently accepted the position of overseer of the spinning department at the Rodman & Heath Cotton Mills, Waxhaw, N. C.

—W. B. Chance, formerly employed at Rockingham, N. C., is now boss carder at the Wiscassett Mills, Albemarle, N. C.

—Morris Cogan has resigned as assistant superintendent of the Brighton Mills, Putnam, Conn., to take a position as overseer of carding in the Canadian Colored Cotton Mills, Hamilton, Ont.

—A. M. Cobb is now chief engineer at the Modena Cotton Mills, Gastonia, N. C.

—S. A. Crutchfield, for some time overseer of carding and spinning for the J. M. Odell Mfg. Co., Bynum, N. C., has resigned to accept a similar position at the Pilot Cotton Mills, Raleigh, N. C.

—J. B. Dobbin, overseer of carding and spinning at the Arcade Cotton Mill, Rock Hill, S. C., has resignd to assume similar duties at the Victor Mfg. Co.'s mill, Greer Depot, S. C. John Broadnax has become overseer of spinning and John Lang has been made overseer of carding to succeed Mr. Dobbin.

—T. C. Gore has given up his position as overseer of carding and assistant superintendent of the Athens Mfg. Co., Athens, Ga., and is now overseer of carding and spinning of the Yocona Mills, Water Valley, Miss.

—J. W. Gardner, for the past eight years employed in the order department of the Globe Yarn Mills, Fall River, Mass., has resigned.

—T. S. Heiskell has recently been appointed overseer of spinning at the Erwin Cotton Mills, Durham, N. C. He will take charge at night.

—S. F. Harriet, formerly with the Henrietta Cotton Mills, Henrietta, N. C., has been appointed superintendent of the West Cotton Mills, West, Texas.

—R. C. Herndon, formerly employed at the Pepperton Cotton Mills, Jackson, Ga., has taken the position of overseer of warping and slashing at the Mandeville Cotton Mills, Carrollton, Ga.

—W. H. Hawkins, late at the Victor Mill, Charlotte, N. C., has become overseer of spinning at the Wadesboro Cotton Mill, Wadesboro, N. C.

—William Hawkins has resigned as overseer of the press room of the Wyoming Valley Lace Mills, Wilkesbarre, Pa., and he has been succeeded by Robert Whartenby.

—Edward Hancock has been made overseer of weaving at the Chewalla Mills, Eufaula, Ala.

—J. R. Jones, late overseer of carding and spinning at the Pilot Mill, Raleigh, N. C., has taken a position with the Pee Dee Mfg. Co., Rockingham, N. C.

—Thomas F. Kennedy, assistant superintendent at the Farnumsville Cotton Mills, Farnumsville, Mass., which have been shut down on account of the condition of the cotton market, has taken charge of the spinning department of the Forestdale Mills, Forestdale, R. I.

—Walter S. Lawson, Lawrence, Mass., has been appointed agent of the Great Falls Bleachery at Somersworth, N. H., to succeed D. M. Savory, resigned.

—J. T. Lewis, superintendent of the Hucomuga Mill, Greensboro, N. C., has resigned to accept a similar position at the Nantucket Mills, Spray, S. C.

—E. Lang, superintendent of the Lanett Mills at West Point, Ga., retired recently, and Scott Maxwell, late superintendent of the Merrimack Mills, Huntsville, Ala., is the new superintendent at West Point.

—D. M. Myers, overseer of carding at the Proximity Mills, Greensboro, N. C., has resigned. William Fuquay, overseer of carding at night at the mill, has also resigned.

—R. W. Mitcham, superintendent of the Colleton Cotton Mills at Walterboro, S. C., has resigned to become superintendent of the De Kalb Cotton Mills at Camden, S. C. F. C. Graddick succeeds Mr. Mitcham.

—A. R. McElhaney, overseer of the carding and spinning departments of the Randleman Mfg. Co., Randleman, N. C., has been obliged to resign owing to ill health.

—A. A. Roop of the firm of J. William Lewis & Co., cotton manufacturers at Chester, Pa., has withdrawn to become general superintendent of Crozer's Mill No. 2, Upland, Pa.

—William Reno has succeeded Eugene Allsbrook as overseer of finishing at the Roanoke Mills No. 1, Roanoke Rapids, N. C. Mr. Allsbrook has gone to Scotland Neck, N. C.

—T. J. Reed has accepted the superin-

tendency of the Cooleemee Mfg. Co., Jerusalem, N. C.

—J. C. Reid has resigned the superintendency of the Delgado Cotton Mills, Wilmington, N. C.

—F. M. Sharpe, recently an overseer in the Pearl Mills, Durham, N. C., has been appointed superintendent of the Strickland Cotton Mills, Valdosta, Ga.

—D. A. Sullivan has resigned as overseer of the carding department at the Conanicut Mills, Fall River, Mass.

—David Seifert has resigned the superintendency of the Greensboro Finishing Works at Greensboro, N. C., to accept a similar position at the Nantucket Mills, Spray, N. C.

—E. M. Sharp, until recently with the Pearl Cotton Mills, Durham, N. C., has accepted the superintendency of the Strickland Cotton Mills, Valdosta, Ga.

—A. A. Sweet, superintendent of the King Phillip Mills, Fall River, Mass., has resigned to become boss carder at the Conanicut Mills, Fall River.

—J. M. Torrence, superintendent of the Long Shoals Cotton Mills, Long Shoals, N. C., has resigned. He has been superintendent at Long Shoals for seven years, and before forming a new engagement will take a much needed rest.

—T. W. Wilmarth of Worcester, Mass., has recently been engaged by Supt. Z. D. Hall of the Berkshire Cotton Mills, Adams, Mass., as assistant.

—W. I. Woodward has resigned the superintendency of the Elm Grove Cotton Mills, Lincolnton, N. C.

Woolen.

—Edward Flannigan, formerly of Gilsum, N. H., is now with the American Woolen Co., Franklin, Mass., filling the position of boss finisher.

—Willis N. Anthony is now acting as superintendent of the Penobscot Woolen Co.'s mills at Dexter, Me., in place of O. F. Ireland. Mr. Anthony has been employed at the mill for many years, and is well fitted for the position.

—Charles Bottomley has been appointed superintendent of the New England Mill, Rockville, Conn., succeeding B. F. Mellor, who recently took half interest in the Standish Worsted Co., Plymouth, Mass. Mr. Bottomley has been a resident of Rockville for several years, having been employed in the American Mill and Hockanum Mills in responsible positions.

—William Burns is overseer of weaving at the Moosup Woolen Mills, Moosup, Conn.

—J. B. Ball, North Andover Depot, Mass., has recently accepted a position with the Brickner Woolen Mills Co., Sheboygan Falls, Wis.

—H. R. Cushing, who recently resigned the superintendency of the Endrich Woolen Mill, Great Barrington, Mass., has begun his duties as superintendent of the Columbia Worsted Co.'s mills, Wallingford, Pa.

—John Conlin, formerly with the Trent Valley Woolen Co., Trent Valley, Canada, is boss finisher at the Melrose Woolen Mills, Auburn, N. Y.

—William T. Connor has engaged as boss weaver with the Melrose Woolen Co., Auburn, N. Y. He was formerly employed by the Auburn Woolen Co. and by John P. Chamberlain, Seneca Falls, N. Y.

—W. E. Cole, overseer of carding at Cole, Senior & Co.'s mill, Medway, Mass., has resigned.

—Thomas Dunlevy, formerly overseer of weaving at the Libby & Henderson Mill, Gardiner, Me., is now superintendent at Beckman & Co.'s woolen mills, Cleveland, O.

—James Dobson, late loom fixer with the Melrose Woolen Co., at Auburn, N. Y., has accepted the position of boss weaver with the Capital City Woolen Mills, Auburn, N. Y.

—William Dryscall, Providence, R. I., is boss finisher at the Martinsburg Worsted & Cassimere Co., Martinsburg, W. Va.

—John Donhue is now in charge of the carding and spinning at the mills of the Ashland Mfg. Co., Dickeysville, Md.

—George J. Fagan, recently boss dyer at the Saranac Mills, Blackstone, Mass., is now filling a similar position at the Mascoma Mills, Lebanon, N. H.

—John Finlayson, designer for 18 years at the Hartland Mills, Hartland, Me., is the new designer at the Megunticook Woolen Co., Camden, Me.

—M. E. George, formerly superintendent of the Mascoma Mills, Lebanon, N. H., is now superintendent of the mill at Northfield, Vt. The mill manufactures white flannels.

—James H. Gallagher, formerly at Great Barrington, Mass., is now overseer of spinning at the Baltic Mills, Enfield, N. H.

—Frank H. Guild, a recent graduate of Dartmouth College, is now in charge of the American Woolen Co.'s shoddy mill at Scytheville, N. H.

—W. H. Hall, of Ware, has been appointed superintendent of one of the woolen mills of William E. Tillotson, Pittsfield, Mass.

—William Haigh has resigned as boss weaver at the Amsterdam (N. Y.) Woolen Co. and accepted a position with the Morris Machine Co.

—Albert Hess, boss finisher at the Auburn Woolen Co.'s mill at Auburn, N. Y., resigned recently.

—W. C. Hall, formerly of Worcester, Mass., is the new finisher at the Pioneer Woolen Mills, Pittsfield, Me.

—Thomas Holden, recently at the Baltic Mills, Enfield, N. H., is now overseer of carding in the Mascoma Mills, Lebanon, N. H.

—Herman Haigh, Philadelphia, Pa., is now employed as overseer of carding by the King & Fildes Co., La Porte, Ind.

—Frank I. Henry is now overseer of the carding and spinning departments at Libbey & Dingley's mill, Lewiston, Me.

—William Hall has succeeded E. W. Cook as overseer of finishing at the Pioneer Woolen Co., Pittsfield, Me.

—Robert McArthur is overseer of weaving in the Mascoma Mills, Lebanon, N. H., having resigned his position with the Yantic (Conn.) Woolen Co. to take the overseership in the former mills.

—Daniel Marley, of Lowell, Mass., is boss finisher at the Mascoma Mills, Lebanon, N. H.

—Charles Mullican, formerly assistant superintendent of the Old Kentucky Woolen Mill, Louisville, Ky., for about four years, and later with the Thomas Kent Mfg. Co., of Clifton Heights, Pa., as superintendent, has recently resigned this latter position.

—Frank McCauley, of Philadelphia, has been appointed overseer of the dressing department of the Cowan Woolen Mill, Lewiston, Me.

—M. J. Nelson has charge of the finishing for the Davenport Woolen Co., Davenport, Iowa. The mills are making cassimeres, flannels and blankets, and running steady.

—Richard Pirlson has accepted the position of boss dyer at the Ashland Mfg. Co.'s mills, Dickeysville, Md.

—P. Quinn, during the past ten years secondhand of the dry finishing department of the Middlesex Mills, Lowell, Mass., has been promoted to the position of overseer of that department, lately made vacant by the retirement of Mr. William G. Fraatz.

—George Russell, recently secondhand in the card room at the Riverside Mills, Lebanon, N. H., is now overseer of the same department, succeeding D. O'Connell, who has resigned.

—James F. Ryan, of Worcester, Mass., is boss finisher at the Baltic Mills, Enfield, N. H.

—James Shaw, who was for seven years dyer at the Oregon City (Ore.) Mills, is now overseer of dyeing with the Reedsburg (Wis.) Woolen Mills Co.

—Edward Slugg, Providence, R. I., has accepted the position of overseer of finishing for the Auburn Woolen Co., Auburn, N. Y.

—Issac R. Stead, overseer of carding for the Passaic (N. J.) Woolen Co., has resigned.

—W. Sykes, dyer at the Arlington Mills, Lawrence, Mass., has resigned after fifteen years of service.

—John C. Thickens, for the last twelve years general manager of the W. E. Tillotson Mills, Pittsfield, Mass., resigned recently, and has gone on a vacation to the British provinces. His son, John Thickens, Jr., has also resigned as assistant superintendent.

—Homer Taplin, of Dracut, has accepted the position of overseer of weaving at Sutton's Mills, North Andover Depot, Mass.

—Thomas West, for many years superintendent and general manager of the Riverside Mills, Lebanon, N. H., and who resigned his position when the plant was turned over to the American Woolen Co., has accepted the position of superintendent with the Taconic Mills, run by Jams Wilson, Pittsfield, Mass.

—G. H. Ward, formerly of the Penobscot Woolen Co., Dexter, Me., has succeeded George W. Burr as finisher at the American Woolen Co., Dover, Me. Mr. Burr has accepted a position as finisher at North Chelmsford, Mass.

—James W. Williams, of East Glastonbury, Conn., is overseer of carding in the American Woolen Co's. mill at Enfield, N. H.

—J. H. Walker, Pittsfield, Me., has been appointed superintendent of the Charles A. Stevens Woolen Mills at Ware, Mass., to succeed Benj. Brown, resigned.

—Thomas F. Brennan has been engaged as overseer of carding by the Dayville Woolen Co., Dayville, Conn. Mr. Brennan is president of the National Association of Woolen and Worsted Overseers. For a number of years he was overseer of carding at the Merchants' Woolen Mills, Dedham, Mass., and prior to that time was engaged in a similar capacity with the Slater Woolen Co., Globe Woolen Co. and other well known woolen mills.

Knit.

—John V. D. Foster, boss knitter of the Cooper Knitting Mill, Bennington, Vt., has resigned to accept a position at Cohoes, N. Y.

—Patrick Geugerty has been appointed superintendent of the Mohawk River Knitting Mill, Cohoes, N. Y.

—George M. Hewitt, superintendent for a number of years with W. Denton & Co., Centreville, Mich., has engaged with A. C. Staley Mfg. Co., South Bend, Ind., as superintendent.

—Thomas F. Kelley has severed his connection with N. L. Birge & Son, Bristol, Conn., by whom he was employed as boss carder and spinner, and has gone to Philadelphia.

—F. Perrine, formerly with the Himes Underwear Co., Waterford, N. Y., has accepted a position with the Victor Knitting Co., Cohoes, N. Y.

—J. F. Scott, who recently severed his connection with the Amsterdam Woolen Mills, Amsterdam, N. Y., has taken the position of boss carder at Robert MacKinnon's mill, Little Falls, N. Y.

—W. G. Tice, superintendent of the Excelsior Knitting Mills, Union, S. C., has accepted the superintendency of the Alpha Cotton Mills, now building at Jonesville, S. C.

Deaths.

—Charles J. Amidon, 73, woolen manufacturer at Hinsdale, N. H., died suddenly of heart disease recently. His sons, R. F. Amidon and W. O. Amidon, were in partnership with him. Mr. Amidon had been postmaster for many years, a

member of the lower branch of the legislature, a state senator, and a bank commissioner in his native state.

—George Whittaker, superintendent of the Sagamore Mills, Fall River, Mass., died August 3.

—Hon. Moses Pierce, of Norwich, Conn., for many years one of the leading cotton manufacturers of that state, died August 18, aged 92 years. He was president of the Aspinook Bleachery Co., of Jewett City, a member of the Cotton Manufacturers' Association, Home Market Club of Boston, and the Metropolitan Museum of New York. Several years ago he gave a building, costing several thousand dollars, to the Hampton (Va.) Institute.

—John Boyd, a retired carpet manufacturer, was struck and instantly killed on August 2, by a train at the Spring Garden Station of the Philadelphia & Reading Railway, at Philadelphia. He was 70 years of age.

—William B. Thornton, a well-known wool dealer, and a resident of Chicago, Ill., died suddenly of apoplexy at Billings, Mont., August 2, aged 54.

—George D. Sweetser, head of the firm of Sweetser, Pembroke & Co., New York, died at the Hotel Majestic, August 7, aged 74 years.

—John J. Ward, junior member of James B. Ward & Bro., manufacturers of Turkish toweling, Howard Street and Lehigh Ave., Philadelphia, died recently.

—Stephen L. Adams, treasurer of the Stafford Mfg. Co., Central Falls, R. I., died at his home in that place August 11. His death was a severe shock to his associates, as he was apparently in excellent health but a short time before his death. He was 50 years of age.

—William Jones, a prominent figure in the worsted yarn spinning trade, died suddenly, August 10, at his home, 1310 North Fifty-second St., Philadelphia, from appendicitis. He was born in Wellington, Somersetshire, England, sixty-one years ago, and came to this country in 1859, entering the employ of John and William Yewdall. He continued with this firm and its successors until 1883, when he, with his brother John, and Nathan Yewdall, formed the firm of Yewdall & Jones Bros. This association continued until January 1, 1900, when William Jones retired from active membership in the firm, but retained a special interest. A widow and one daughter and one son survive him.

—Alfred Fales Jenks, Pawtucket, R. I., died at Atlantic City, N. J., August 5, aged 71 years. He was born in the village of Central Falls, R. I., August 23, 1828, and began work in the machine shop of Fales & Jenks at Central Falls, of which firm his grandfather was a member. Later he was taken into partnership, the firm name being changed to Fales & Jenks' Sons. When the firm was reorganized and incorporated as the Fales & Jenks Machine Co., Mr. Jenks was elected president, which position he held until he was obliged to relinquish it on account of failing health. He was also stockholder in the United States Cotton Co., serving as president of that corporation, and a director in the E. Jenckes Mfg. Co. and the Pawtucket Mfg. Co.

—Alexander Driscoll, overseer in the cloth room in the Pequot Mills, Montville, Conn., died at his home suddenly last month, aged 18 years. He had worked in the mills for about a year and a half, and had but recently been made overseer.

—Edward Jones, an old-time calico printer and dyer, of Philadelphia, Pa., died in that city last month, at the age of 81 years. His father, Edward Jones, established the first calico print works in Philadelphia.

—William H. Folwell, president of the Folwell Bros. & Co., Philadelphia, Pa., died at his home at Sharon Hill, Pa., August 16. Together with his brother, Nathan T. Folwell, he established himself in business in Philadelphia in 1858, as a jobber and commission merchant. They eventually became manufacturers of dress goods, and as their business advanced, erected the Collingwood Mills, at Third and Cambria Sts., in 1886. Mr. Folwell was born March 23, 1840, at Mulica Hill, N. J. A widow and four children survive him.

—R. R. Hart, of the Hart Manufacturing Co., Flat Rock, N. C., died there recently.

—Archibald L. Miller, Newark, N. J., died August 9. Mr. Miller was born in Bathgate, Scotland, in 1824, and was connected with the Clark O. N. T. Thread Co., for forty-seven years. He entered its employ in Paisley, and came to this country thirty-two years ago. He had charge for many years of the twisting department in the Newark mill.

—Jonathan Smith, general manager of the Reading Cotton Mill, Reading, Pa., died August 3, aged 75 years.

—William Clark, of Newark, N. J., president of the William Clark Thread Co., died suddenly at his summer home at Watch Hill, R. I., August 6. Mr. Clark was considered one of the most noted thread makers of the world. He was a native of Scotland, being born in Paisley, 84 years ago, and came to this country when a young man, after learning the thread manufacturing business in Scotland. For many years he was manager of the George Clark Thread Works, Newark, N. J., and resigned to organize the William Clark Thread Co., at Westerly, R. I. This company is now amalgamated with the American Thread Co. Two sons and two daughters survive him. One of the sons, Robert K. Clark, is a director of the American Thread Co., and the other, William Clark, Jr., is general manager of the Clark Co.

—John J. Ward, of the firm of James B. Ward & Bros., Philadelphia, Pa., manufacturers of turkish towelings, died after a short illness, last month. He was in his thirty-ninth year. A widow and two children survive him.

—Frank P. Rathbun, for 28 years an overseer in the Appleton Mills at Lowell, Mass., died Aug. 26 at his home, aged 58 years.

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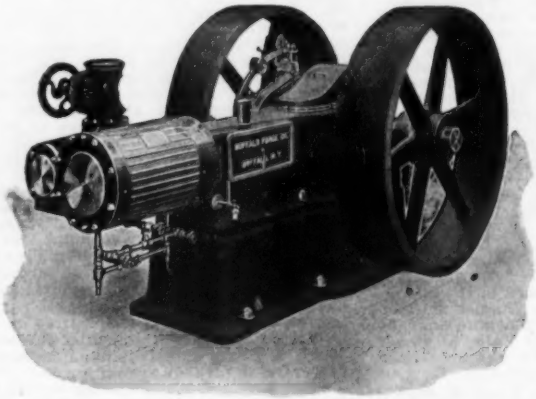

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Buffalo Forge Company, BUFFALO, N. Y.

NEW YORK. CHICAGO.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Appraisals.
American Appraisal Co, Milwaukee, and 804 Park Row Bldg, New York.

Arc Lamps.
Lea Manufacturing Co., Elwood, Indiana.

Architects and Mill Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W., Paterson, N. J.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co. 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Belt Cover.
Warren Mfg. Co., Chicago, Ill.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Hammer, C H & Co., Philadelphia.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Popham, Henry, & Son, Newark, New Jersey.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
Stephenson Mfg, Co., Albany, N. Y.
Warren Mfg. Co., Chicago, Ill.

Belt Hooks.
Bristols Co., Waterbury, Ct.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Blowers.
American Blower Co., Detroit, Mich.
Boston Belting Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
New York Blower Co., New York.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
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Parker, Henry Co, Springfield, Vt.
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Boiler Compounds.
Straus & Co., 59 Broad St., New York.

Boiler Tube Cleaners.
Coggeshall Mfg. Co., 130 1-2 Liberty St., New York.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Braiding Machinery.
New England Butt Co. Providence, R. I.
Thun & Janssen, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Bridges.
American Bridge Co., The, New York.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.

Brushers
See Napping Machines.

Buildings (Steel).
American Bridge Co., The, New York.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Buck Card Clothing Co., Palmer, Mass.
Hammer, C. H. & Co., Philadelphia.
Leigh, Evan A, 35 Mason Building, Boston.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.

Check System.
Foster, E. H. & Co., Cohoes, N. Y.

Chemicals and Apparatus.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Clutches.
American Tool & Machine Co., Boston, Mass.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.

WHERE? HOW? WHY? WHO?

Where can we get such a machine?

How can we produce that effect, or color, or fabric?

Why does this machine run badly, and what can I do to fix it?

Who makes such and such fabrics?

• • • •

Such questions and scores of similar ones are constantly arising, and our Questions and Answers Department undertakes to answer those relating to textile matters, free of any charge, to the best of its ability, and invites such correspondence from subscribers. Address the Boston office.

TEXTILE WORLD,
620 Atlantic Avenue, Boston.

Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
Hirschman, H. 419 Broome St., New York.

Concrete.
Warren Bros. Co., 143 Federal St , Boston.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton-New Bedford Copper Co , New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co , Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Corrugated Iron Shutters.
American Bridge Co., New York.

Cotton (Egyptian).
Stoddard, Haserick, Richards & Co., Boston.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machines Co., Chicago Ill.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G & Co., Boston, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Schofield, Geo. L., Philadelphia.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket, R, I.

Cotton Openers and Lappers.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Decoration Wash for Interiors.
De Ronde, F. S, Co., 54 John St., New York.
Moore, Benj. & Co , Brooklyn, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I

Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dyers, Bleachers and Finishers
American Yarn Printing Works, 134-150 North 22d St., Philadelphia.
Brophy's, T, Sons, Jasper St, Philadelphia
Capstick, John & Sons, Montville, N. J.
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3d St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co, Kensington, Pa.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Littlewood, G. J., & Sons, Manayunk, Pa.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Philadelphia Linen Finishing Co., Frankfort, Philadelphia.
Rowland, Samuel, Schuylkill Haven, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Biren Bros., Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia
Frank's Wagon Works, 2731 N. 6th St, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Hopkins, Machine Works, Bridgeton, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Knapp, C. H., Paterson, N. J.
Lincoln, The, Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co., Springfield, Vt.
Peel, Samuel H. Germantown, Philadelphia Pa.
Phenix Iron Foundry, Providence, R. I.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks,
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M , Philadelphia, Pa

Dyestuffs and Chemicals.
American Aniline Co., 163 No. Front St., Philadelphia.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston
Dillon & Co, 20 Cedar St, New York.
Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Innis & Co, 3 Cedar St, New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Jones, J. Howell, 18 Burling Slip, New York.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Kilpstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J, & Co, 182-184 Front St, N. Y.
Merrimac Chemical Co, Boston, Mass.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St., New York.
Schoellkopf, Hartford & Hanna Co., Philadelphia.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.

Dynamos.
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven, Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Humphrey, S. K., 53 State St., Boston.

Electrical Construction.
Philadelphia Electric Construction Co., Philadelphia.

Electric Fans.
Buffalo Forge Co., Buffalo. N. Y.
Sturtevant Co., B. F., Boston.

Electric Motors.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
American Bridge Co., The, New York.
Ferguson, John W, Paterson, N. J.
Rittenhouse, Frank, Norristown, Pa.

Exhaust Heads.
Burt Manufacturing Co , Akron, Ohio.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Pendleton, Walter & Co., New York.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fireproof Construction.
American Bridge Co., The, New York.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fulling Mills for Woolen Goods.
Frank's Wagon Works, 2731 N. 6th St., Philadelph a.
Hopkins, Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F, Boston.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co, Boston.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Fleming & Chapin, Philadelphia.
Hepner & Horwitz, Lacings, 40 Howard St, N. Y.
Kavanaugh, Geo. W., Cohoes, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Eclipse Machine Co., Sanquoit, N. Y.
Industrial Mfg. Co., Camden, N J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Rittenhouse, Frank, Norristown, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
American Knitting Machine Co., Woonsocket, R. I.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 John St., Philadelphia.
Campbell & Clute, Cohoes, N. Y.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Fisher Ktg Mch. C., Utica, N. Y.
Hepworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Leighton Machine Co, Manchester, N. H.
Lindley, Geo. W., 5122 Wakefield St., Germantown, Pa.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.

Knitting Needles and Supplies.
Breedon, Wm, & Son, Amsterdam, N. Y.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co, Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Kavanaugh, Geo. W., Cohoes, N. Y.
Lydall, H, & Foulds, Manchester, Conn.
Manufacturers' Supplies Co., 66 No. 4th St, Philadelphia.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St. Phila, Pa

Looms.
Crompton & Knowles Loom Works, Worcester, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A. & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Ms.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Lubricators.
Ameledema Oilless Bearing Co., Berkeley St, Wayne Junction, Philadelphia.
Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Manufacturers' Agent.
Cunningham, Jas. D, 1001 Chestnut St, Philadelphia, Pa.

Mechanical Draft.
Boston Belting Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St, Worcester Mass.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Mill Brushes.
See Brushes.

Mills For Sale.
Denny, R. B., 143 Federal St., Boston.

Mill Builders and Engineers.
American Bridge Co., The, New York.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Dixon Lubricating Saddle Co., Bristol, R.I.
Easton-Burnham Co., Pawtucket, R. I.
Holmesburg Banding Mfg. Co., Holmesburg, Pa.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Thurston, A. G, & Son, Fall River Mass
Watson, L. S, Mfg.Co. Leicester, Mass.

Napping Machines.
American Napping Machine Co, Williamstown, Mass.

Ardrey, S. B, & Sons, Bristol, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.

Neck Shaping Machine.
Eclipse Machine Co., Sanquoit, N. Y.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Numbering Machine.
Bates Machine Co., 346 Broadway, New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Packing.
Boston Belting Co , Boston.
Jenkins Bros., New York.

Paint.
DeRonde, F. S. Co, 51 John St., New York City.
Moore, Benj. & Co, Brooklyn, N. Y.

Painting and Whitewashing Machine
Triumph Machine & Manufacturing Co. 209 Hester St , New York, N. Y.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington. D. C.
Wright, Brown & Quinby, 53 State St, Boston, Mass.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
Beckley, A. J. & Co., Garwood, N. J.
Harrington & King Perforating Co., 230 North Union St , Chicago. Ill.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting.
Garfield Woolen Co, Garfield, N. J.

Pipe Covering.
Keasby, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Ameledema Oiless Bearing Co, 149 West Berkley St, Wayne Junction, Pa.
Christiana Machine Co., Christiana, Pa.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Saginaw Manufacturing Co., Saginaw, Mich.

Presses.
Boomer & Boschet Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Fisher Ktg. Machine Co., Utica, N. Y.
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Phillips Co, The Thomas, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Printers (Fabrics and Yarn.)
Capstick, John & Sons, Montville, N. J
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pulley Covers.
Warren Mfg, Co., Chicago, Ill.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Quills.
Parker, Henry Co, Springfield, Vt.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.

Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.

Roofing, Gravel, Slag and Composition.
Eastern Granite Roofing Co., Jersey City N. J.

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
American Separator Rope Co., Holmesburg, Pa

Rove Traverse.
Rawlins, J. H, Chester, Pa.

Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave. Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I.

Schools.
American Correspondence School of Textile, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
New Bedford Textile School.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Separators.
Ring Frame Thread Separator Co., The, Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works. (Arthur Birch), Arlington Heights, Mass.
Birch Bros., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Excelsior Sewing Machine Co., Philadelphia.
Industrial Mfg. Co., Camden, N J.
Manufacturers' Supplies Co , 66 No. 4th St., Philadelphia.
Nye & Tredick, 606 Arch St, Phila, Pa.
Rusden Machine Co., Warren, R. I.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Union Button Sewing Mch. Co., 164 High St., Boston.
Wilcox & Gibbs S. M. Co., New York.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Stein, Hirsch & Co, 165 Duane St, New York.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips Chemical Co, The Thomas, Providence, R. I.

Soaps.
India Alkali Works, Boston, Mass.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Ward & Vandegrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Frames for Wool
Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Sprinklers.
International Sprinkler Co., Philadelphia, Pa.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.
Lee Odlum Co., Memphis, Tenn.
Pendleton, Walter & Co., New York.

Steam Boiler Compound.
Straus & Co., 55 Broad St., New York.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Pendleton, Walter & Co., New York.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Rusden Machine Co., Warren, R. I.
Jenkins Bros., New York.
Sturtevant Co., B. F., Boston.

Steam Valves.
Jenkins Bros., New York.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lee-Odlum Co., Memphis, Tenn.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co. Warren, R. I.
Stearns, A. T. Lumber Co, Neponset, Mass.
Woolford, George, 2340 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y.
Fleming & Chapin, Philadelphia.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Telephones.
Mianus Electric Co., Mianus, Conn.
Philadelphia Electric Construction Co, Philadelphia.
Plummer, F. O. 620 Atlantic Ave., Boston.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.
Ameledema Oilless Bearing Co., Wayne, Junc., Phila. Pa.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tom Cats.
Frank's Wagon Works, 2731 N. 6th St., Philadelphia.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Lee-Odlum Co., Memphis, Tenn.

Trimmers.
Excelsior Sewing Machine Co, Philadelphia.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Belting Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mattern, Geo. 44 East 8th St., New York.
New England Ventilating & Heating Co, Providence. R. I.
New York Blower Co., New York.
Philadelphia Drying Machinery Co., 6731 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville. Mass.
Snediker & Carr, 139 No. 7th St, Phila, Pa.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Wall Whitening.
DeRonde, F. S. Co, 54 John St, New York City.
Moore, Benj. & Co, Brooklyn, N. Y.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Hopkins, Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co, Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Waste.
Kay, John J, Philadelphia, Pa.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Nanz & Co, 127 Duane St., New York.
Philhdelphia Electric Construction Co., 1328 Chestnut St., Philadelphia.
Waggoner Watchman Clock Co, Grand Rapids, Mich.

Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.

Water Wheels.

Bradway, C. P., W. Stafford, Ct.
Christiana Machine Co., Christiana, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.

Bradway, C. P, West Stafford, Ct.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.
Lombard Water Wheel Governor Co, 61 Hampshire St, Boston.

Winders. (Back.)

Taylor, Jas., 835 Arch St., Philadelphia.

Winders. (Hosiery.)

Universal Winding Co, 226 Devonshire St, Boston.

Wood Pulleys.

Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.

India Alkali Works, Boston.

Wool Combing Machinery.

Crompton & Knowles Loom Works, Worcester, Mass.
Leigh, Evan A. 35 Mason Bldg., Boston.

Wool Extracts.

Garfield Woolen Co, Garfield, N. J.

Wool and Waste Dusters.

Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass
Stillman-Randall Machine Co, Westerly, R. I.

Woolen and Worsted Machinery.

Altemus, W. W, & Co, 2316 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Woonsocket Machine & Press Co Woonsocket, R. I.

Wool Shoddies.

Garfield Woolen Co, Garfield, N. J.
Slack, Wm. H. H., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.

Hunter, Jas. Machine Co., No. Adams, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G, Sons, Graniteville, Mass.

Yarns, Threads, Etc.

Banding.

Holmesburg Banding Co., Holmesburg, Pa.
Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Catlin & Co. New York and Boston.
Colchester Mills, 346 Broadway, New York.
Dexter Yarn Co., Pawtucket, R. I.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Germantown Spinning Co, Germantown, Pa.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Flax, Hemp, Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y

Gassed Yarns.

Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co, New Bedford, Mass.

Glazed Yarns.

Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Warren, W, Thread Works, Westfield, Mass
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Cranston Worsted Mills, Bristol, R. I.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Boyer, B. F, & Co, Camden, N. J.
Campbell, Geo, & Co, Phila, Pa.
Colchester Mills, 346 Broadway, New York.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Germantown Spinning Co, Germantown, Pa.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston.
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Platt Bros, Manayunk, Pa.
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co, N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.
Wolstenholme & Clark, Baker and Mallory Sts., Manayunk, Pa.

Mercerized Yarns.

Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co, Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
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Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
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Platt Bros, Manayunk, Pa.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campbell, Geo. & Co, Phila, Pa
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Herbst & Jones, 21st and Naudain Sts, Philadelphia, Pa.
Pocasset Worsted Co., Thornton, R. I.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Waverly Worsted Co, Main St. and Green Lane Manayunk, Pa.
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The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

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COTTON SUPERINTENDENTS.

1686 **Cotton Supt.** Age 53; American; married. Large experience. Been in present position as superintendent for a number of years and previously in the same mill as overseer of weaving. Nearly all kinds of goods. Is familiar with nearly all makes of machinery. Refers to past employers.

1706 **Cotton Supt.** Age 39; American. Has started several small mills. Understands business from bale cotton to finished cloth. Has made yarns from 8's to 26's run into plaids, ginghams, etc., and is familiar with most all machinery. Can furnish references. Prefers Southern States.

1608 **Supt. of Yarn Mill.** A young man, 30, married, and competent to fill a good position with credit. Honest, temperate and excellent business training and judgment. Thorough manager and salesman, and keenly alive to conditions of today.

1689 **Supt. or Assistant Supt.** Age 37; American; married. Large experience as overseer and first-class references. At present employed as overseer, but is capable of filling a superintendent's position. Worked on prints, twills, sheetings, cambric and fancies.

1673 **Cotton Supt., Carder, and Spinner.** Age 23; English; single. Large experience in English mills. Can take position at once. Has worked on all kinds of cotton machinery.

1754 **Wanted,** position as superintendent in cotton mill. Thoroughly understands coarse and fine yarns, combed and carded, and all classes of white goods.

189 **Cotton Superintendent** wants position in Northern mill. Has been in charge of Southern mills for 7 years. Previous experience in N. E. Is well known among mill men, and can furnish the best of references. Age 39; married.

1772 **Supt. or Overseer of Weaving.** Age 38; American; married. Lawns, fine sheetings and shirtings, sateens, twills, fancies, denims and cottonades. Is familiar with Whitin, Lowell, Draper, Northrop and English machinery. Not at present employed.

WOOLEN SUPERINTENDENTS.

1682 **Supt. & Designer,** or would take a position as designer and a. t. supt. in a good mill at $1500 per year. Has had 14 years' experience in woolen and worsted mills from pattern weaver, loom fixer, boss weaver, designer. Men's wear, wool and worsteds and dress goods. Best of references.

880 **Supt. or Assistant Supt. and Designer.** Over 25 years' experience as supt. and designer. Has designed and manufactured nearly all classes of goods made in a woolen mill, in wool and worsted, such as shawls, blankets, beavers, kerseys, cheviots, fancy cassimeres, overcoatings, worsted suitings, etc. 53 years old; married, with family. Would go West or nearly anywhere. Wants a mill where he can permanently settle and give them the benefit of his experience as a manufacturer. A first class man.

1683 **Woolen Supt.** Large experience. Last mill where he was employed was for five years overseer and 15 as superintendent. A good man on flannels, sackings, skirtings, woolen dress goods and domestic woolen goods. Well up in weaving, dyeing, carding, etc., and has a general knowledge of all departments in a Western woolen mill. Englishman; married. Refers to past employers.

1674 **Supt.** or assistant in woolen mill. 10 years' experience on cassimeres, cloakings, etc. Well posted on shoddies. First-class references. Strictly temperate. Age 29; American; single.

1594 **Supt. of 5 to 10 Worsted** Combing Mill, or asst. supt. in a larger mill, or good position as drawer or drawer and spinner. Wants $3.50. Has worked on fine, medium and coarse wools, numbers principally from 14 to 50 in the gray and fancy mixes. Had seven years' experience in England and 10 years' experience in a mill in this country. Can take place at once.

1387 **Woolen Superintendent,** one who has had a thorough practical experience in setting up and operating woolen mills. Would take charge of small mill or finishing department in large mill. Now employed but wishes to change. Correspondence solicited.

1768 **Supt. and Designer** in a worsted or woolen mill. Prefers worsted mill. Now employed as designer and assistant supt., but is competent to take charge of a mill. Is familiar with all makes of machinery and has manufactured nearly all classes of goods. Will not change for less than $2,000 a year. Excellent references.

WOOLEN CARDERS.

1696 **Carder,** or secondhand. Experienced on cassimeres, cloakings, blankets, shawls, jeans, and is familiar with Furbush, Bridesburg and Smith cards. Wants position in Western or Southern States. Can take place immediately. Age 30; American; single.

1701 **Boss Carder.** Age 39; English; married. Has had large experience as boss carder in Canadian mills, and has worked in New England mills, also held positions in England before coming to this country. He has worked on all kinds of wool, cotton, waste, mungo and shoddy mixes, cassimeres, dress goods, knit goods and blankets. Can take position at once. Excellent references.

1707 **Overseer of Carding.** Worked for 21 years in a woolen mill as boss carder, but through sickness was obliged to resign his position. Is now ready and wants a situation at once. Age 49; American; married. Wants $3 a day. Has worked on dress goods and flannels.

1643 **Woolen Carder.** Age 45; American; married. Has worked as overseer in first-class N. E. mills for the past 18 years. He is at present employed, but wishes to better himself. Could leave on a week's notice. Has worked on cassimeres, dress goods, flannels and underwear. A good manager of help and thoroughly competent and eliable.

COTTON CARDERS.

1734 **Boss Carder.** Age 47; Irish; married. Been in a mill all his life. Held position of secondhand for several years and for the past 20 years or more has held the position of boss carder. Prefers New York state. Cotton, wool, percentages, waste batches.

1751 **Carder and Spinner.** Can give first-class references as to character and ability. Has had twenty-one years' experience as overseer on both American and English systems of carding. An American; 45 years old. Has worked on fine and coarse, also colored cotton.

1759 **Boss Cotton Carder.** 25 years old. Has had 12 years' experience in a cotton carding room, and is well advanced in drafting and changing. Speaks French, Italian and English. Willing to go South or West. Refers to past employers.

1718 **Second-Hand in Cotton Card Room.** Has had 10 years' experience in N. E. mill. Understands all makes of machines. Can make all changes from 1 to 20 hank. Has taken course in cotton spinning at American Correspondence School of Textiles, New Bedford. First-class references. Would start at $2 00 a day. Young man and strictly temperate.

1720 **First Class Cotton Carder or Supt.** Has had the advantage of a great deal of experience in the various departments, and is thoroughly posted on all details of manufacturing and machinery. Would accept a position North or South. 36 years of age; American; married. Worked on print cloths, twills and sheetings. Has had charge of bleaching.

1662 **Overseer Cotton Card Room.** Age 52; American, married. Not employed at present and could take a position at once. Has worked on all kinds of goods in order mills, and is familiar with all kinds of machinery. Refers to former employers.

WOOLEN SPINNERS.

1648 **Boss Woolen Spinner.** 47 years old. 28 years' experience. Worked on all kind of stock, from ¼ to 12 run. Temperate, steady, and refers to past employers. Will work for moderate salary. Not employed and could come at once. Experience on cassimeres, flannels, beavers, knit goods dress goods, blankets, shawls.

1691 **Boss Spinner.** Large experience in first-class N. E. mills on flannels and all kinds of fancy cassimeres. Englishman; age 50; married. Refers to past employers.

1595 **Overseer Worsted Spinning.** 10 years as overseer of spinning, twisting, reeling, dressing, spooling on worsted yarns. Englishman; age 41, married. Now employed, but does not like section of country. A first-class man in every respect.

1543 **Woolen Spinner and Carder.** Has handled both departments together and separately. Will go South or West. Age 29; single.

1601 **Woolen Spinner,** or painter and glazer in any kind of mill. Age 31; Irish; married. Wants $10 50 per week. Has worked on cheviots, overcoatings, broadcloths, satinets, hosiery, yarns, etc.

1519 **Overseer of Woolen Spinning.** Age 31; married. Has worked on yarns from 1 run down to 5½. Some experience on shoddy. Will work for moderate salary.

COTTON SPINNERS.

1636 **Overseer Cotton Spinning, Spooling, Warping, Etc.** Has held position seven years of second-hand and has taken textile school courses. Having had unusual opportunities to learn, he feels competent to take position as overseer. Highly recommended by present employers.

1655 **Overseer of Cotton Spinning.** 42 years old; married. Experience as a spinner covers a period of 30 years in first-class N. E. mills. Has worked principally on fine yarns, 30's to 200's. Had some experience on coarse numbers. First-class references.

1364 **Mules or Frames.** 34 years old; married. Thoroughly understands all makes of English and Mason mules. Has set up machinery and been expert fixer. Wants good position as overseer of mule room, or would take charge of frames. Accept $3.50 per day. Best references.

1663 **Overseer Mule Room.** Eleven years' experience in Fall River mills, and for the past ten years overseer of mule room. Excellent reference from present employer. Age 44, married.

1698 **Overseer of Mules.** 34 years old; married; English. 10 years' experience, chiefly on English mules, on all grades of cotton yarn. Would like to get a large job.

1703 **Overseer Ring Spinning, Warping and Spooling.** Is experienced on white work from Nos. 4's to 30's. Is familiar with Whitin and Lowell Machine Shop spinning frames and spoolers and warpers. Wants $3 per day to start with. Age 39; American; married.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1712 **Second-Hand or Overseer of** Weaving. Age 29; American; single. Has some knowledge of designing. Has worked on fancy worsteds, cassimeres and cheviots. Wants $2.50 per day to start with. Is familiar with Crompton & Knowles machines.

1688 **Overseer of Weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1536 **Boss Weaver or Superintendent.** Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

1468 **First-Class Weaver** on fancy woolens, worsteds and meltons, cotton worsteds and shoddy goods. Can take overseer position after 6 days' notice. Has been loom fixer, boss and superintendent. Age 43. Crompton & Knowles looms.

COTTON WEAVERS.

1681 **Overseer or Secondhand of Cotton Weaving.** Has had long experience as loom fixer, secondhand and overseer, and can furnish excellent references. Has also had charge of cloth hall and drawing departments. With one mill was 15 years.

1668 **Overseer of Weaving.** Age 41; English; married. Has had large experience as loom fixer and secondhand of weaving, and is competent to take an overseer's job. Has worked on shirtings, sheetings, sateens, fancy lenos, and all grades of fine goods all the way from 2 to 24 harness.

1652 **Overseer Cotton Weaving.** Worked on about all kinds of cotton goods. Age 41, American, married. At present employed in the South, but wants to change for a healthier locality. Refers to present and past employers.

1708 **Overseer of Weaving.** Has had 15 years' experience on 12 different kinds of looms and most all kinds of cotton goods. Has worked in some of the largest mills in the South.

1738 **Overseer of Weaving. Drawing-in,** Warping. Slashing and all preparations. 14 years' experience in colored mill in Manchester, Eng., and two years in this country. Age 37; English; married. Has worked on sateens, drills, dress goods, zephyrs, turkish towels, and can pick out own pattern for weaving and drawing-in. Understands the different makes of looms. Wants $3.00 per day.

1459 **Fancy Cotton Weaving,** Slashing, etc. Age 36; married. Has worked on all kinds of fancy goods and is thoroughly competent in all departments of manufacturing, with the exception of spinning. Understands velvet and corduroy weaving. Is not at present employed and can take a position immediately.

KNITTERS.

1084 **Overseer of Knitting and Finishing.** Age 35; married. Has just resigned position in the South on account of climate, and is ready to take place at once. Can furnish best of references.

1597 **Boss or Second-hand Underwear Knitter** Can accept position at once. Experience covers men's, women's and children's high, medium and low grades. Scott & Williams, Nye & Tredick, Snyder & Fisher machines.

1755 **Boss Knitter or Fixer.** Has worked on eiderdowns, astrachans, cardigan jackets, balbriggans, rubber linings and fancy knit goods. Will not change for less than $3 a day.

598 **Boss Knitter or Supt.** Age 48; married. Is thoroughly familiar with the manufacture of all classes of seamless hosiery, and can take any position at short notice.

1722 **Supt. of Knitting.** Age 37; American; married. Long experience as overseer fits him for superintendent's position. Has also worked three years in machine shop, setting up knitting machines and making the different parts of same. Has worked on cotton, wool, merino and silk; plain and ribbed hosiery and underwear. First-class recommendations.

1747 **Overseer or Supt. Seamless Knitting,** or would take traveling position with some good reliable seamless machine company. Age 38; married; American.

DYERS.

1733 **Dyer.** Age 33; married; a Scotchman. Worked in Scotland, and has been over seven years in this country as secondhand for a large manufacturing concern, with whom he is at present, but desires to change to a position where he will have full charge. Has handled cotton yarn from 10's to 80's in warp and skein, also experienced on worsted and silk yarns. Can furnish references as to character and ability.

1730 **Dyer.** Overseer or would take good secondhand job. Age 24; English; single. Chain warps, filling, raw stock, underwear and hosiery yarn, print yarn, cop bleaching.

1664 **Boss Dyer.** Age 40; Scotch, married. 14 years' experience as boss dyer. 20 years in all at trade. Has worked on wool, cotton, ramie, worsted, shoddy and union waste dyeing for overcoatings, linings, tweeds, cassimeres, plaids, flannels, and ladies' wear, also on all wool and union piece dyes, hosiery, knit goods, yarns, slubbing. Is practically familiar with scouring, bleaching, carbonizing, speck dyeing and mill soap making.

1680 **First-class Cotton Dyer.** Has had charge of piece dying in several of the largest bleacheries and dye works in the country, to all of which he refers. Is thoroughly familiar with cotton piece dyeing, both fancy and fast blacks, and is also a first class yarn dyer and has a general knowledge of bleaching and finishing. Understands mercerizing. 39 years old; married; American. Habits and record first-class.

1714 **Cotton Yarn Dyer.** Age 36; Scotch; married. Has had 15 years' experience on fast shades. Wants $4 00 to start.

DESIGNERS.

1635 **Designer** on colored cotton dress goods, and shirtings, and fancy worsted dress goods, piece dye, jacquard work in cotton, silk filling, also lappets. Would not consider position paying less than $1200 a year. Is at present employed in one of the leading mills, making fancy cotton, and is an especially bright young man. Early training in Scotland. Has been in this country about four years

1773 **Asst. Designer**. Age 22; English; single. Fancy worsted, cotton and silk mixed dress goods; serges, shoetops and some double cloths.

1672 **Designer, Overseer of Weaving,** or assistant supt. Age 26; English; single. Has worked in various mills in England and this country. Holds first honors diploma for weaving and designing (London City Guilds). Fancy worsteds, dress goods, colored and fancy cotton goods.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages. Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1591 **Designer** on fancy worsteds, cotton worsteds, fancy cassimeres, tweeds, fancy back overcoatings, etc. Experience in first-class N. E. mills. Age 30. At present employed, but can accept position at once.

FINISHERS.

1526 **Foreman of Finishing Room,** Folding, Packing, etc. Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 11 years in this country. Can give good references.

1716 **Finisher.** Age 29; English; married. Has worked as wet finisher, shearer, gigger, second-hand and overseer. Prefers a mill making cassimeres, worsteds, dress goods and face finished goods. A high grade of goods. Is familiar with all kinds of American and English finishing machinery, and can keep same in the best of repairs. Prefers Eastern States. Can take position at one week's notice. Best of references.

1770 **Overseer of Finishing,** or would take secondhand position in large mill. Age 35; married; American. Cassimeres, cheviots, kerseys, meltons, chinchillas, dress goods and cloakings. Is familiar with all makes of machinery in woolen mills.

1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily.

1763 **Overseer of Finishing,** desires position in the South. Age 38; Scotch; married. Fourteen years' experience; seven as secondhand and seven as overseer finishing. Ladies' dress goods of all descriptions. Wants $4.00 per day.

1761 **Finisher.** Is 27 years old, and has worked 13 years' in finishing room, and three years as overseer. Fancy cassimeres, cheviots, meltons, broadcloth and mixes. Can give good references, and will go anywhere. Wants, at least, $2.50 per day.

MISCELLANEOUS.

1731 **Young Man of 32 desires to go** to Japan. Is temperate. Been twenty years in cotton mill, and has had experience on many kinds of looms, including Draper. Has best of references. Holding a good position in mill now.

1744 **Fixer.** Age 24; American; single. Is familiar with Boss, Invincible, McMichael & Wildman, Brinton, Denny and Victor machines. Wants $15 a week.

1740 **Assistant Supt. and Designer,** overseer of weaving, designer, or both. Age 29; Scotch-American; married. Worked in Scotland and 5 years in this country. Fancy white and colored cotton goods, lenos, lappets, welts, dimities, sateens, Jacquard, towels and handkerchiefs.

1566 **Wanted by a good practical man,** a position as overseer of slashing, warping, beaming and spooling. Now employed, but would change for a position in a first-class Northern mill.

1717 **Knitting Machinist.** Age 31; American; married. Is familiar with Lamb, Leighton and Pepper knitting machines; Hepworth and Beattie loopers; Wheeler & Wilson and National button-hole machines; Union button sewing machines; all seamers and felling machines; Singer, Wheeler & Wilson and Standard facing machines. Can take position on two week's notice.

1711 **Mill Engineer and Draughtsman.** American; married. Would take up other responsible duties in connection with engineering work. References of the highest character, and salary expected quite reasonable.

1713 **Foreman of Picker Room, or** Painter for some mill and weaver in winter or any other winter work. Wants employment year around. Is an all around man in woolen mill. Has worked on beavers, blankets and fancy dress goods. Wants $2 per day to start.

1726 **Superintendent** broad silks from time of leaving weave room till ready for consumer, piece dye cotton and silk mixtures included, or will accept overseership in any department connected with above. 35 years old; American; married. Is familiar with most all machinery used in this branch.

1685 **Boss Dresser or Assistant Designer.** Has taken a thorough course in designing, and is well up in calculations and in the making of fancy men's wear goods of all kinds. Has worked in Scotland and three years in this country. His knowledge of yarn calculations and practical experience as dresser tender makes him well fitted to fill a position as boss dresser and to run a room in an up to date and efficient manner, or to fill a position as designer or assistant.

1746 **Overseer Warping and Dressing,** or weaving, warping and dressing. Has worked on woolens and fancy worsteds. Is familiar with Davis & Furber dressers; Draper, Phenix and Lowell Machine Shop warpers; English plain and Crompton looms. Wants $3 a day.

1762 **Chemist.** Age 23; American. Wants a position in dye works, print works or bleachery. $15 a week to start on. Excellent references.

1764 **Engineer and General Repair Man.** Age 45; American; married. Wants $2.50 to $3.00 a day. Over twenty years' experience.

1765 **Overseer Colored Cloth Room.** Age 43; American. 25 years' experience as secondhand.

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Mill property in Central Connecticut. Main mill building of stone, 25,000 square feet of floor space. 125 H. P. well developed water privilege. Wheels in good repair. Outer buildings contain 10,000 square feet floor space. Six dwelling houses and one boarding house, in good repair. Address inquiries to S. M. Green Holyoke, Mass.

Cotton Batting Mill For Sale.

A well organized plant, machinery in good condition, will be sold as a going concern, with real estate, or the machiney might possibly be sold for removal. Address, J. H. H., care of Textile World, Boston.

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A thoroughly well-posted superintendent is wanted who understands every branch of the manufacture of seamless cotton bags, to take charge of a plant of about 6,000 spindles and 100 bag looms. Must furnish the best of references and prove his ability in this special line. Address, in confidence, A.G.T., care of TEXTILE WORLD.

REED MAKER WANTED.

Experienced reed maker who can repair and build reeds, and also harnesses if necessary, is wanted in a silk plush mill. Address, with full particulars, V. S., care of Textile World.

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May be had at points on Southern Railway

Steady and remarkable success has attended the mills located on the Southern. It is the great Textile Line of the South. Mill Men and Mill Investors should investigate the advantages our districts afford.

We have now a number of excellent points for new Cotton Mills, or for Knitting Mills, where local capital will join with that from the North in new enterprises. If you are interested, write us.

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Do You Know about The Johnson Patent Vertical KNIT CLOTH DRYER?

Every manufacturer who has seen it thinks it the best ever seen on the market.

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Rotary head and Automatic.

Stretches and rolls cloth perfectly.

Requires only 4 feet of floor space.

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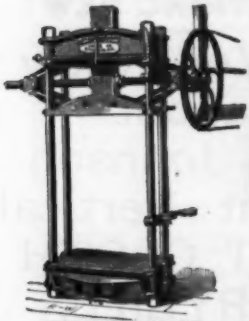
WANTED.

Bleacher that understands bleaching and finishing of Marsailles crochet bed spreads, Must understand the finishing part thoroughly. State wages expected. Address. HUNT, care of Textile World.

PRACTICAL MAN WANTED.

Wanted, by a good business man with $30,000 capital and good credit, a thoroughly practical man to manufacture some article made out of cotton. None but a man of good habits, strictest integrity and thorough practical knowledge of proposed business need apply. Climate particularly beneficial throat and chest troubles. Mineral Spring near, infallible cure most forms dyspepsia. Address, P. O. Box 25, Union Point, Ga.



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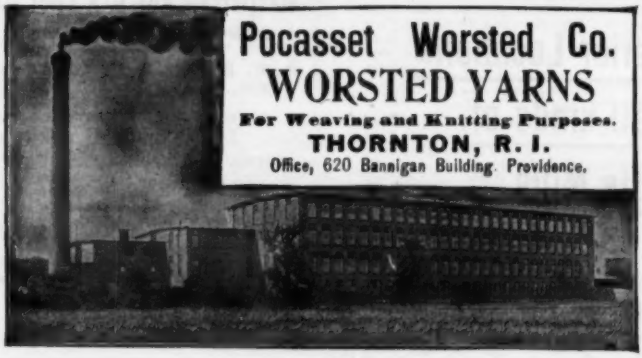

Pocasset Worsted Co.

WORSTED YARNS

For Weaving and Knitting Purposes.

THORNTON, R. I.

Office, 620 Bannigan Building, Providence.

FLYER SPUN

Mohair and Worsted

YARNS.

Mohair Plushes,

Worsted and Cotton Braids.

D. COFF & SONS, Pawtucket, R. I.

ESTABLISHED 1861.

YARN DEPARTMENT.

Eastern Yarn Market.

Cotton Yarn: Spinners are not getting the orders which are necessary to run them on full time, and spinning machinery is slacking down.

The prices are being fairly well held up on account of the price of raw cotton. Southern yarn is being used more generally than before, and prices are lower as the demand for cotton yarn has been greatly reduced.

The weavers of cotton worsted are buying lower than was the case a month ago. The fact of the matter is, that while raw cotton is high, some spinners are making prices in order to keep going.

Southern yarn is being sold 3 to 4 cents above the price of cotton, and prompt deliveries are being made. When the boom was on, these same mills were getting 7 cents per pound more than the price of cotton.

The increase of machinery in the South is begining to be felt. Fleece lined underwear continues to call for large quantities of colored mix yarn, jagers, silver grays, and other mixes.

The makers of ribbed underwear continue busy, although buyers have much of their yarn supply contracted for. Cotton hosiery mills continue busy and the buying of yarn is being conducted on a very conservative basis, as these mills were forced to pay high prices for yarn which came mostly out of the mills' pocket as the consumer bought his hosiery at a fixed price, and an advance to any extent was impossible.

Combed Egyptian and Peeler yarn is largely controlled by the larger concerns, and prices are maintained at the late reduction. Balbriggan manufacturers are buying, but not in large blocks.

The cotton yarn situation is now largely dependent on the cotton crop report, and business is very quiet, awaiting developments.

Woolen Yarn: Spinners continue fairly busy for this time of year; to be sure there is more or less disappointment, as the light weight business is not what was hoped for.

The weavers of dress goods are busy, and have been placing orders for yarn —some knitters are buying yarn in anticipation of their requirements, and knitters of underwear and hosiery are well employed.

Knitters are finding that Australian stocks of all kinds are very scarce; fine domestic wastes are scarce, so that orders are beginning to be placed abroad for thread waste and noils.

The only man in the woolen industry who still thinks the boom is on, is the wool dealer, who informs would-be purchasers at a price, that he holds millions of pounds of wool on consignment but has orders not to sell until after the election or January 1st.

Some of the large wool merchants are reported to have purchased millions of pounds of Montana at prevailing prices in the West. They acknowledge that trade is very slow; but for all this there have been comparatively few concessions made on wool and when lower prices are made the buyer has to fight for his price.

It is hard to see, with the present state of affairs, how the ideas of the buyers of cloth are to be reconciled with the ideas of the sellers of wool. The one will not sell unless a high price is given, and the other will not buy unless low prices can prevail, and neither seems anxious to transact business. The knitters and manufacturers of cashmeres have some business, and are low down on some kinds of stock.

The Montana clip has been mostly sold outright. Some of the wool has

Frank E. Patterson, Prest. Oscar W. Wood,

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

W. Warren Thread Works,

SPOOL COTTON
on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

The Best is the Cheapest.

It is BETTER and CHEAPER to wind yarn by the "Universal" system before shipment from the mill, thus insuring perfect delivery to knitting machines without rewinding.

UNIVERSAL WINDING CO.,

F. H. BISHOP, Manager.

226 Devonshire St., - Boston, Mass.

not been offered, and was shipped East on consignment. Utah has been largely bought up. There are still many millions of pounds of wool held in the territories, the owners not being willing to accept present prices.

Idaho, Wyoming and other clips have not yet moved. The same is the condition of the Oregon clip, which is mostly in the growers' hands. As has been suggested, whatever may be the condition of the western wool grower, the eastern dealer is subject to financial considerations, and tight money with no business will mean that some wool may be sold regardless of consequences, although it must be acknowledged up to the present writing wool has been very firmly held.

The woolen cloth merchant seems to be taking the wool position from the London wool market, and a brief summary may not be out of place here. The next sales open Oct. 9th, with 350,000 bales of merino to be disposed of.

The London wool dealers are trying to make the most of a bad state of affairs, but acknowledge that the business in England and Europe is in a depressed condition.

Prices at the close of the last sales were 5 and 10 per cent. cheaper than in May. In merino lambs, superior selections have fallen 10 to 15 per cent., but other sorts not to this extent. Prices, however, are much above the ideas of manufacturers here. Australian thread waste is being sold at from 55 to 60 cents per pound.

Woolen Yarn Prices: Add 12 cents to price of wool or wool combinations for medium sizes, and the result will give price wool yarn.

Worsted Yarn: Spinners are not busy.

The yarn most in demand is ¼ to ⅜ blood, and no orders are being placed anticipating future requirements. Some buyers say that they believe now is a good time to place orders, but do not know what their requirements are to be.

Last season all expected that the demand was to be for fine cloth, and bought accordingly, when the demand

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
906 Chestnut St., Philadelphia.

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IROQUOIS MILLS.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., N. Y.

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Commission Merchants.
122 & 124 Chestnut St., Philadelpia, Pa.
74-78 Summer St., Boston.
Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

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MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 8s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns,
Double and Twist Yarns for
the Weaving Trade.
PAWTUCKET, - R. I.

LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

Eddy & Street,
COTTON, **YARNS** WORSTED,
WOOLEN, AND **BRAIDS** SPUN SILK.
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles. **ORSWELL MILLS** FITCHBURG MASS.

COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER.

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Legal proceedings will at once be taken against infringers and users of infringements.

WE HAVE, WITH INSTALLATIONS IN HAND, ORDERS FOR OVER 2,000 HUMIDIFIERS.

COTTON YARNS

from 2s to 26s single and ply.

SPECIALTY—FIRE HOSE CORD

and Yarns put up on tubes wound on Universal System.

WHITTIER COTTON MILLS, - - Lowell, Mass.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS

In gray and all colors, single or in any twist.

COLORED COTTON

Machined, Carded or in Roving.

NOVELTY YARNS

In Cotton, Mercirized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.
We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.
We use a uniform grade of long stapled cotton in all our manufacture.

was entirely for ¼ to ⅜ blood yarn.

We hear of some spinners, in order to keep their frames running, selling 2/30s ⅜ blood yarn for 67½ cents, but only in limited amounts.

Weavers complain about orders on light weights. In some instances where weavers have expected orders for several hundred pieces, they have been requested to make samples of seven or eight yards, and in other cases customers have informed the manufacturer that they are not going to buy worsted cloth this season, and that they have ordered their woolen cashmere cloth in Europe. Said one prominent weaver of worsted cloth: "If I do not get light weight orders, I shall shut my mill down for from four to six weeks. I am willing to take an order for a thousand pieces of cloth at cost to keep my mill going, but I do not know where to get the order."

A certain manufacturer was in the market for yarn and salesmen had been following him hard to catch an order. When it got to the point of buying, the manufacturer backed down, and after telling a salesman that he was five cents per pound too high, said: "We are following the market carefully, and do not know exactly what we shall want. It looks now as though there was going to be a large demand for cashmeres and worsted cheviots, but there is no knowing what to do, and we shall place no orders before Sept. 15th at earliest."

The dress goods manufacturers making worsted dress goods are slack. Many of them have been running on coarse grades of yarn and now acknowledge that, if they are to stay in the business, they must manufacture a finer grade of cloth.

The heavy weight orders have about all been delivered and the light weight business has not yet started. The mills on French system are working on old orders, and no new orders will be placed until October and November.

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

COLCHESTER MILLS,
Thos. F. Patterson, Treas.
Spinners of
COTTON YARNS.
Sales in charge of
A. D. SALKELD,
908 & 909 New York Life Building,
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Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

GREENE & DANIELS MFG. CO.,
COMBED, CARDED AND GASSED
Yarns, Threads, Twines and Chain Warps,
Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,
Manufacturers of
White, Colored, Fancy and Double and Twist, **COTTON WARPS**
HOUSATONIC, MASS. 4s to 60s.

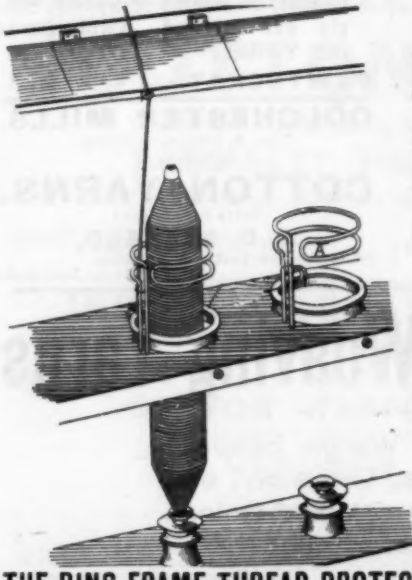
The J. R. MONTGOMERY CO.,
WINDSOR LOCKS, CONN.
Manufacturers of

Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS

Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL, WORSTED, MOHAIR AND SILK.

Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production: on frames without any protectors or plate separators about twenty-five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins.

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse.

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

The above results have been obtained in the mills of S. Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y., in whose mills the protectors have been in use on all spinning frames since October, 1899, and by permission we refer to said firm for a confirmation of our claims.

THE RING FRAME THREAD PROTECTOR CO., - Amsterdam, N. Y.

Spinners are going slow on placing orders for wool. Business will not start in good shape until Sept. 15th to Oct. 1st, and will then increase in volume as the season advances. 2/40s Australian, $1.12½ per pound; 2/40s ½ blood, 90 cents; 2/40s and 2/36s ⅜ blood, 82½ cents to 85 cents; 2/26s and 2/30s high quarter, 67½ to 75 cents; 2/14s ¼ blood, 65 cents.

Philadelphia Cotton Yarn Market.

The staple cotton market has continued very high. Trade has been generally poor in the yarn market. Stocks have accumulated considerably in the weaving trade, until commission agents have begged their spinners to shut off part of their production to relieve the market. The situation is not so bad in the knitting yarn trade, as we believe there has been practically no accumulation of stocks either at the mills or in commission hands, of knitting yarn, either of Eastern or Southern makes.

Sales have been made to some extent at the expense of values. There has been little change recently in prices. This market is about as follows:

Southern cones:—

5s and 6s	15
7s and 8s	15 to 15½
10s	15½ to 16¼
12s	16½ to 17
14s	17 to 17½
16s	17½
18s	17½ to 18¾
20s	18½
22s	18½ to 19
24s	19 to 19½
26s	19½ to 20
30s	21 to 22

Eastern list prices:—

10s	18¾
14s	19¾

H. HIRSCHMAN,

Direct selling Agent for Hosiery, Knit Goods and Underwear.

Reliable accounts solicited.

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FRENCH SYSTEM. BRADFORD SYSTEM

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Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.

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Woolen Yarns.

Main and Walnut Sts., - - Manayunk, Pa.

Correspondence solicited.

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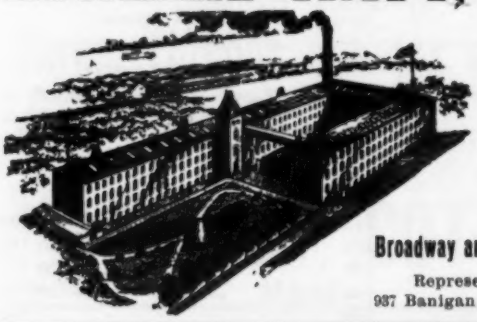

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Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

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MANFRS. OF
ALL NUMBERS
SINGLE AND TWO-PLY,

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Worsted and Mohair Yarns—white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns only.

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

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Worsted Spinners.

Yarns, both French System and Bradford.

Knitting Yarns in all Grades and Mixes.
All Numbers to 60s.

21ST STREET AND WASHINGTON AVENUE, PHILADELPHIA.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 220 CHESTNUT ST., PHILA.

20s	22½
22s	23¼
30s	27¼

Silver and jaeger yarn, 2 cents per pound advance.

Mock Egyptian, 2 to 3 cents advance.

Southern skein:—

8/1	13½ to 14
10/1	14 to 14½
12/1	14 to 14½
14s	14 to 15
16s	14½ to 15½
20s	16½ to 17½
22s	17 to 17½
26s	18 to 18½

Good soft qualities at usual advance.

Warps (single):—

14s	14½ to 15
16s	15½ to 16
18s	16 to 16½
20s	16 to 16½
26s	17 to 18

Skein:—

8/3	13 to 13½
12/2	14
14/2	14
20/2	16½ to 17
30/2	19½ to 20
40/2	28 to 29

Warps (two-ply):

14s	15 to 15½
16s	16 to 16½
20s	16½ to 17½
30s	20 to 20½
40s	29 to 30

Woolen, worsted and merino yarn, also wool spun yarn, very dull. Prices on raw stock are still held at such figures as to enable spinners to make very little concession, and they are looking for a material advance in prices as soon as buyers have orders to offer.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

Weaving and Knitting Yarns.
Sanitary and Fancy Mixes
Wolstenholme & Clark,
Worsted and Worsted Merino Yarns.
FRENCH SYSTEM.
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No. Manayunk, Philadelphia, Pa.

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OFFICE AND WAREHOUSE:
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GLOBE DYE and BLEACH WORKS,
Frankford, Philadelphia, Pa.
Dyers, Bleachers and Mercerizers of Warps and Skein Dyeing.

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SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

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Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

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THE SECRET

of our popularity is no secret to our customers Experience has taught them that we give them better work and better service than they can get elsewhere.

T. BROPHY'S SONS, Jasper Street above Clearfield Street, PHILADELPHIA.

Dyers of All Kinds of Yarn and Cotton Warps.

ATLAS FOUNDRY & MACHINE CO.,

SUCCESSORS TO **ATLAS MFG. CO.**

Manufacturers of

Wool Burring, Picking and Mixing Machinery, PARKHURST DOUBLE CYLINDER BURR PICKERS, Steel Ring and Metalic Burring Machines and Feed Rollers, Etc.

OLD METALIC BURR CYLINDERS COVERED WITH STEEL RINGS
Self Feeders for Pickers and Cards, Picker and Machine Brushes, Atlas Improved Side Drawing Machines and Creel.

INQUIRE ABOUT OUR NEW AUTOMATIC WOOL DUSTER.

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PROVIDENCE DYE WORKS.

Dyers and Finishers,

COTTON YARNS, Suited for HOSIERY and WEAVING Cotton, Woolen and Worsted DRESS GOODS, Woolen and Worsted Mixed CASSIMERES and CLOAKINGS, also Woolen and Worsted Slubbing, COTTON YARN and WARP DYERS and BLEACHERS.

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Satisfaction Guaranteed.
Capacity 10,000 lbs. per day. Prompt Deliveries.

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ESPECIALLY FOR THE **Knit Goods Trade.**

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HOME BLEACH AND DYE WORKS,

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All Numbers Up to 140. 2 Ply in
Combed Peelers, Egyptians, &
Sea Islands . . . . .

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Philadelphia, Pa.

FAST COLORS

For Wool, Woolen and Cotton Yarn and Piece Goods Dyeing, and for Calico Printing

ALIZARINE RED, PASTE AND POWDER.

Alizarine Blues, Oranges, Browns, Yellows, Maroon, Gray and Black.
Cœruleine, Galleine, Mythylene Grays.
Thionine Blues, Thionine Indigo, Solid Green and
PATENT BLUES (superseding Extracts of Indigo on account of fastness and color bloom) for Wool and Silk, Benzidine and Primuline Colors, Zinc Dust, Aniline Salts and Oil.

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OF ALL KINDS OF FABRICS.

3-4 and 6-4 Woolens and Mixed Cassimeres,

ALSO

Cottons and Linens.

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Towels and Damask, also Turkey Red Damask, Centre Covers, Doylies, Napkins, Carriage Robes, Dusters, etc.

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Direct dyeing colors for cotton.

18 BURLING SLIP, - NEW YORK.

Telephone 3799 John.

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THE SHARPLESS DYE-WOOD EXTRACT CO.,

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LOGWOOD.
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—MANUFACTURERS OF—

INDIGO BLUE DYE

Wool Scouring, Raw Stock in Piece.
Dyeing all shades. Unions and shades.

All work done by experienced workmen and guaranteed to give satisfaction.

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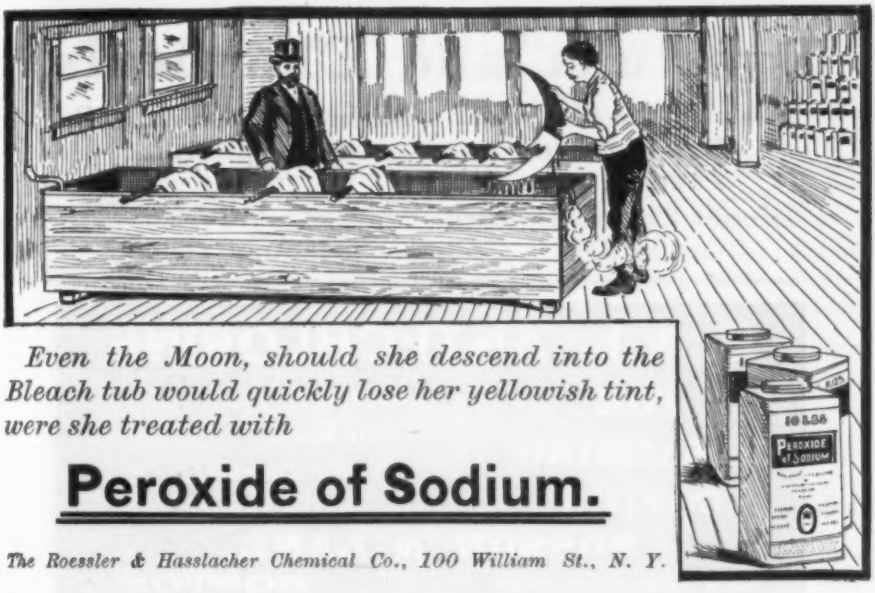

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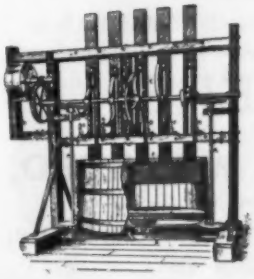

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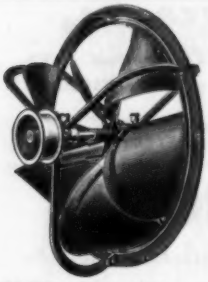

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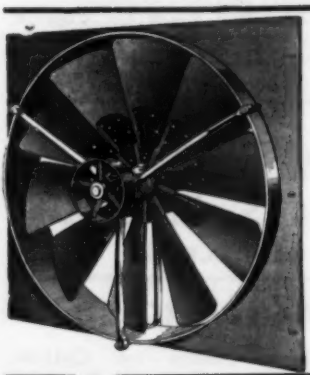

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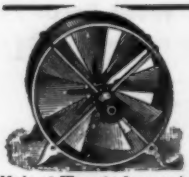

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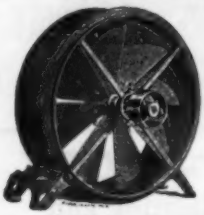

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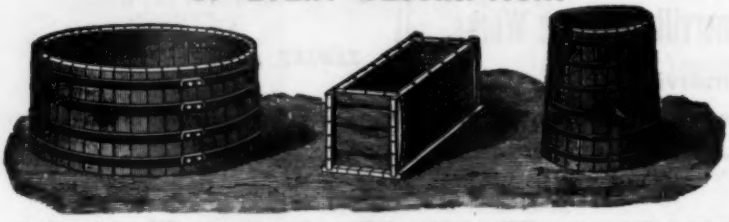

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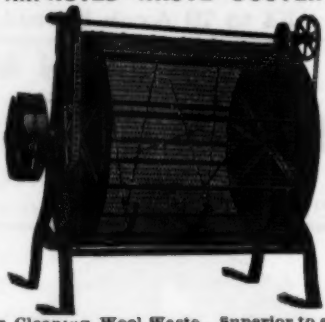

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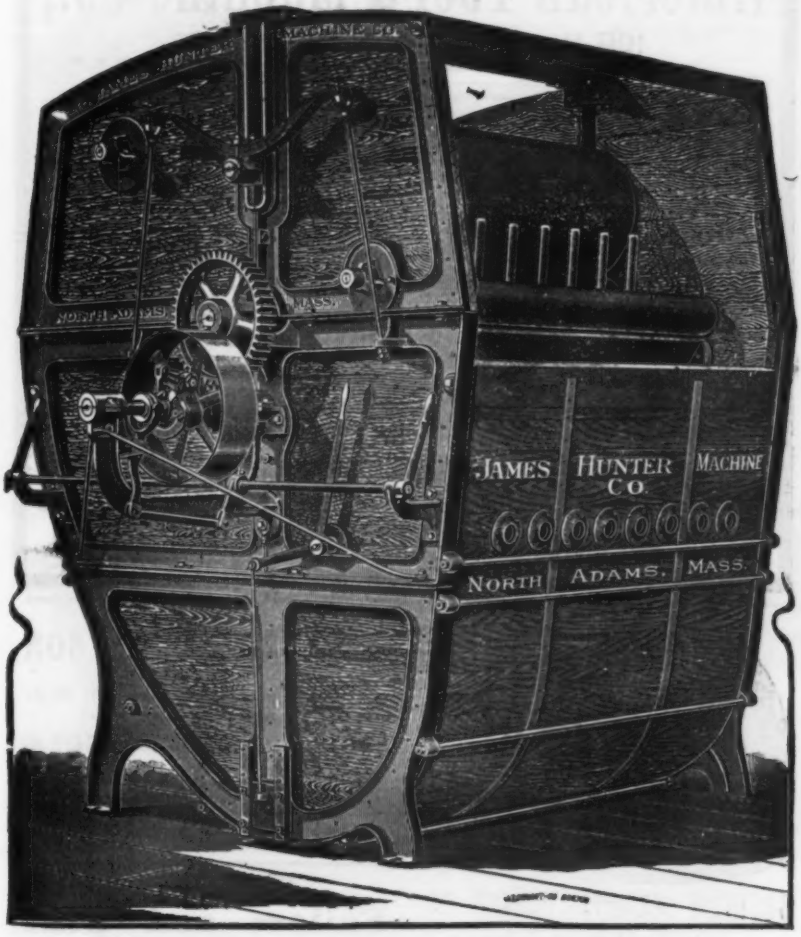

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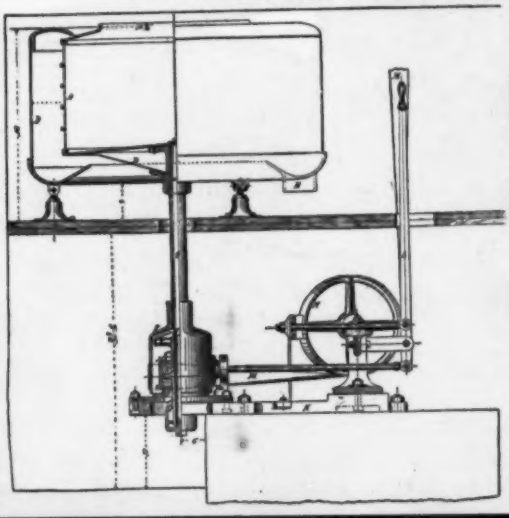

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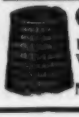

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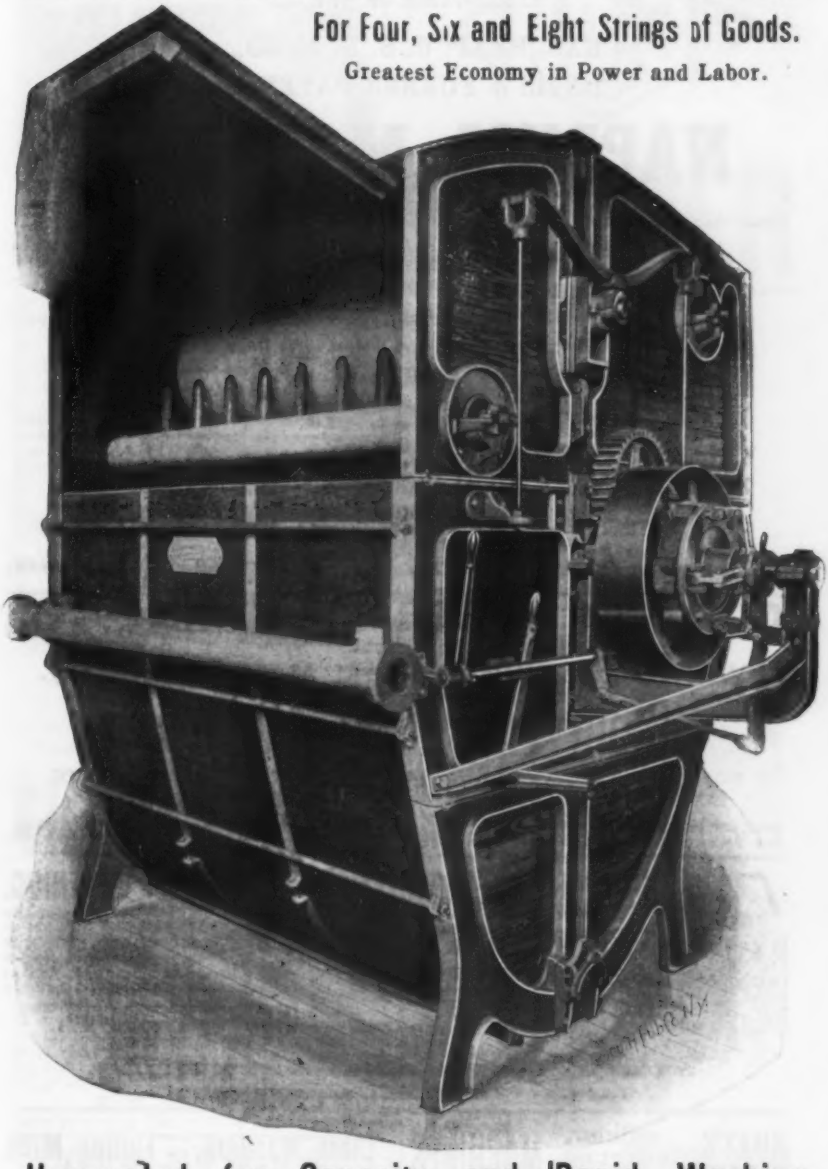

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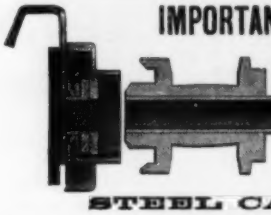

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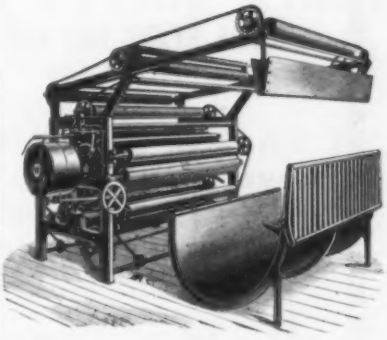

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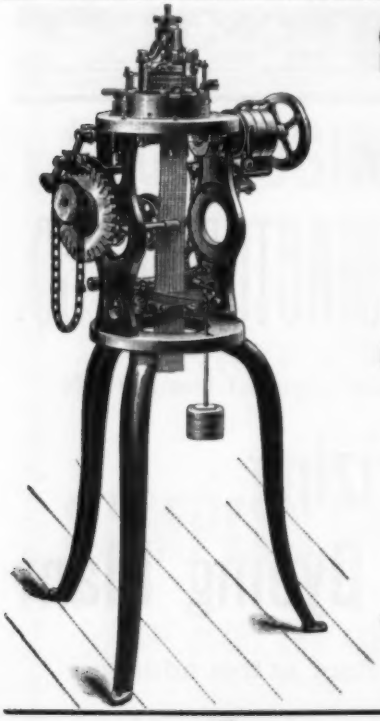

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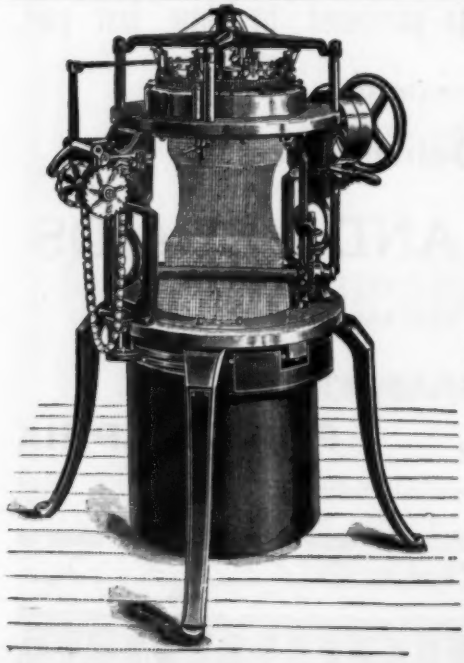

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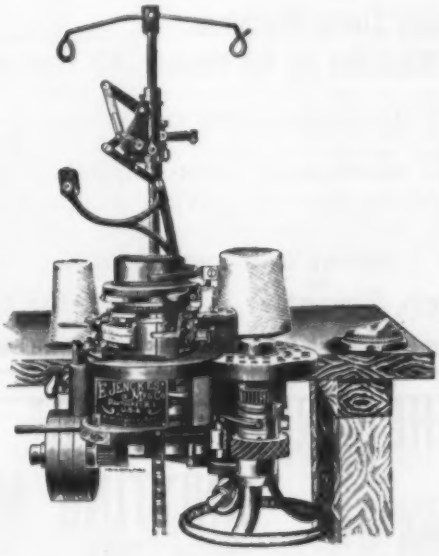
IS ADAPTED TO THE ECONOMICAL PRODUCTION OF ALL CLASSES OF SEAMLESS HOSIERY.

It is the only full automatic machine made to be fastened to a bench, occupying no more space than semi-automatic machines.



It has a simple and positive attachmen for putting in and taking out an extra thread in heel and toe automatically.

A simple and positive attachment can be applied for **making high spliced heels and double soles automatically**, at the same time the heel and toe are reinforced by an extra thread. The splicing arrangement is supplied with yarn from a bobbin holding a quantity of yarn, and not from a small cop such as is usually used in devices of this kind.

The only successful yarn changer is applied to this machine. This device changes the yarn automatically at heel and toe, or at any desired point in the knitting of the stocking. It does not require a revolving bobbin which is commonly used in similar devices, but allows the use of a full size winder bobbin or cone for each yarn used. It is perfectly positive in its operation, is simple and well built, and is recommended as filling a popular demand.

In knitting "string work," **a loose course** is put in as a guide for cutting off each stocking. **A loose course can be be put in for looping** the toes. This is a great advantage in fine gauges.

Attention is invited to the new method of transferring tops to the needles of machine in knitting Half Hose, and in footing ribbed leg hose.

The method of doing this is entirely new, and must not be confounded with the ordinary method of transferring with a quilling.

The speed of the machine is reduced just before changing from circular to reciprocatory knitting, thus avoiding all shock. All parts are interchangeable.

By changing cylinders only, the machine will make either fine or coarse gauge of goods.

The Invincible is a compact, light running, full automatic machine, simple in construction, has few parts, runs at high speed, occupies small space, and is put upon the market at a price that defies competition from either full or semi-automatic machines.

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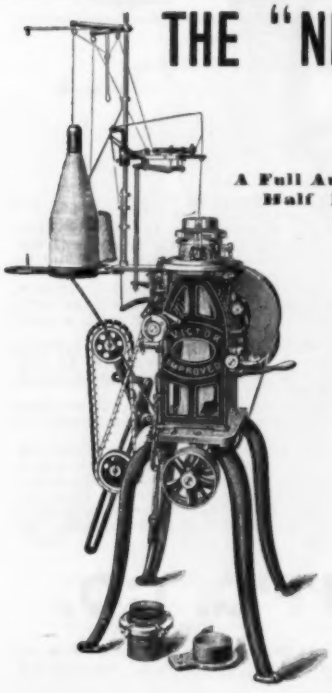

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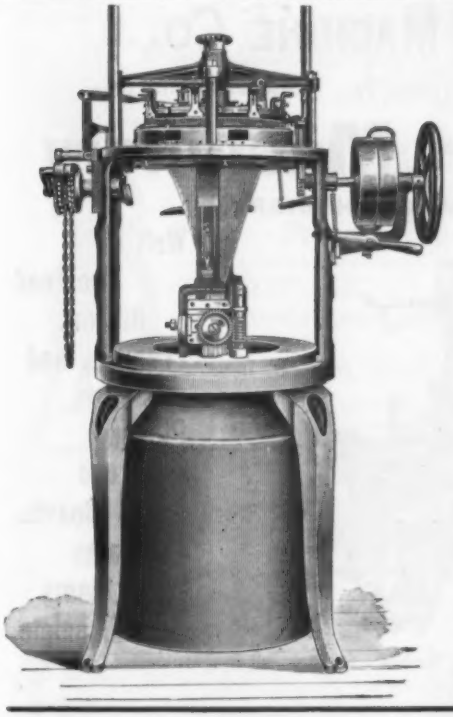

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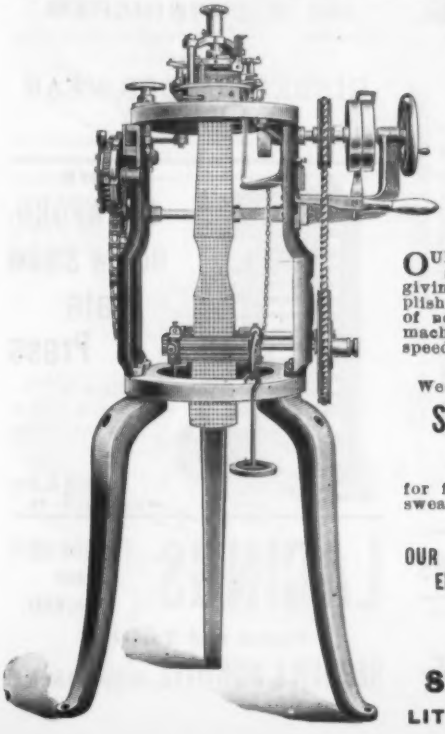

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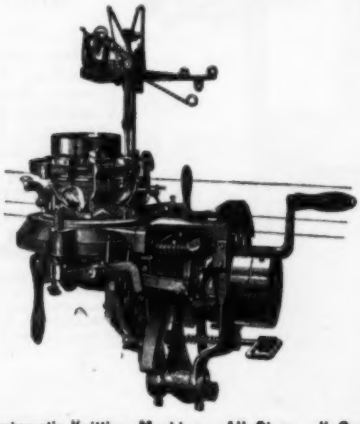

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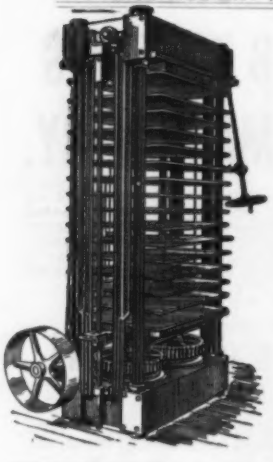

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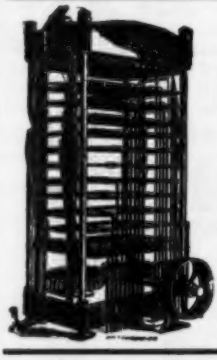

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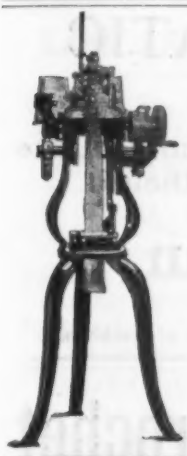

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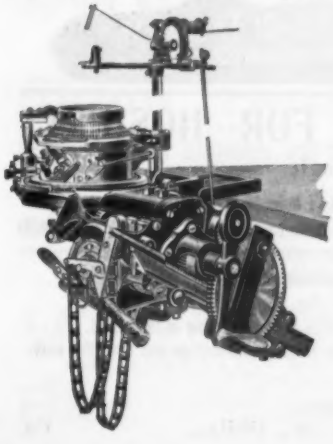

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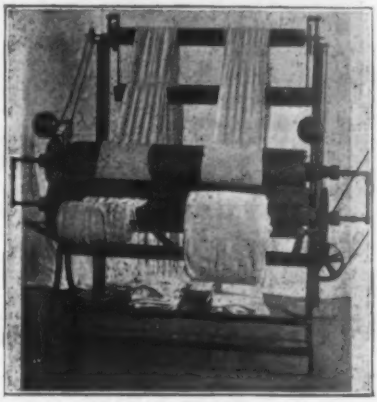

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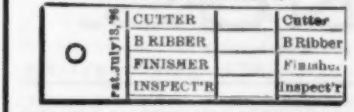

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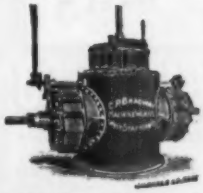

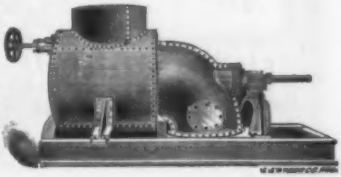

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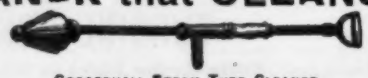

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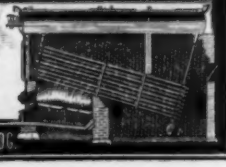

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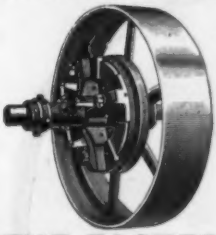

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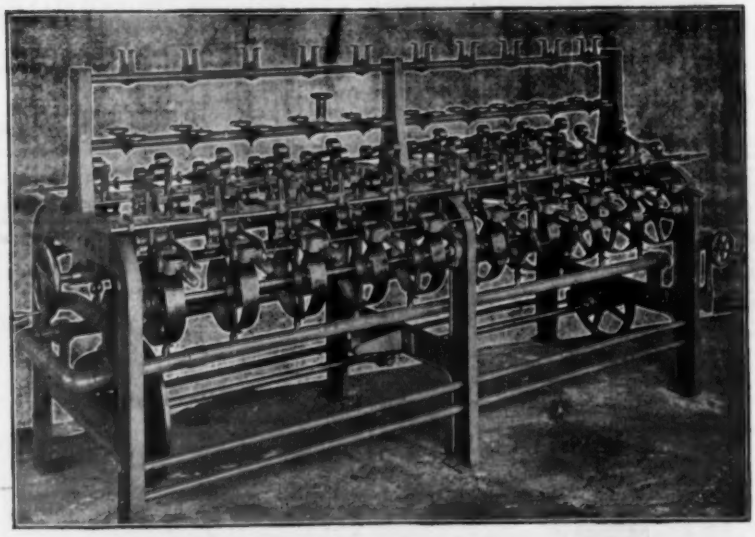

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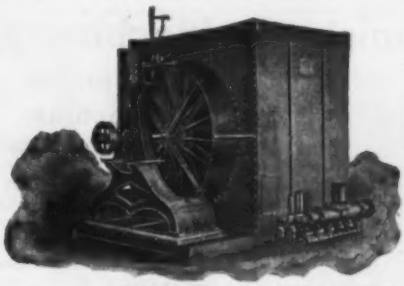

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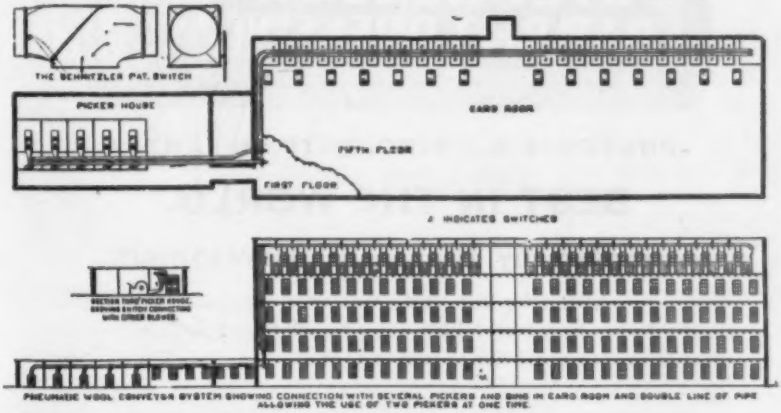

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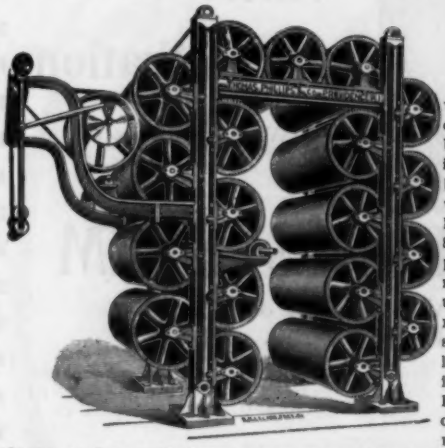

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